Prof. Roberto Tateo,
Dipartimento di Fisica,
Via P. Giuria 1, 10125, Torino

CURRENT ACADEMIC POSITION: Associate Professor (With National Academic Qualification as Full Professor)
WEB PAGE: http://personalpages.to.infn.it/~mattelli/Imodels.html

EDUCATION

1990-1993: Torino Univ. , PhD in Physics (First in the PhD selection)
Supervisor: Prof. F. Gliozzi.
1985-1990: Torino Univ., Degree in Physics (110/110 cum laude)
Supervisor: Prof. F. Gliozzi.

WORK EXPERIENCE

Since 2002: Researcher/Associate Professor, Physics Dept., Torino.

2001-2003: EPSRC Advanced Fellow, Maths Dept., Durham, UK

2000-2001: EPSRC Visiting Professor, Maths Dept., Durham, UK

1998-2000: Post-doc, FOM Fellowship, Physics Dept., University of Amsterdam, NL
Reference person: Prof. Dr. B. Nienhuis

1997-1998: Post-doc, TMR Fellowship, Service de Physique Theorique, CEA, Saclay, F
Reference person: Prof. J.-B. Zuber

1994-1997: Post-doc, Maths Dept. , Durham, UK
Reference persons: Prof. E. Corrigan, Prof. P. Dorey

AWARDS AND PRIZES

2000: EPSRC Visiting Professor Fellowship

2001: 5 year EPSRC Advanced Fellowship

2001: EPSRC Fellowship Support Funds

2011: Best Paper Prize, Journal of Physics A
"Spectral equivalences, Bethe ansatz equations, and reality properties in PT-symmetric quantum mechanics", P. Dorey, C. Dunning, R.Tateo, 2001 *J. Phys. A: Math. Gen.* **34** 5679

2017: Two articles among the "Most influential papers from Journal of Physics A , The 50th anniversary of the Journal of Physics series",
(http://iopscience.iop.org/journal/1751-8121/page/JPhys50-viewpoints):

A) "Spectral equivalences, Bethe ansatz equations, and reality properties in PT-symmetric quantum mechanics", P. Dorey, C. Dunning, R.Tateo, 2001 *J. Phys. A: Math. Gen.* **34** 5679
(View point by Carl M. Bender)

B) "Thermodynamic Bethe ansatz for planar AdS/CFT: a proposal",
D. Bombardelli, D.Fioravanti, R.Tateo, 2009 *J. Phys. A: Math. Theor.* **42** 375401
(View point by **Joseph A. Minahan)**

MORE DETAILS ON THE EPSRC FELLOWSHIPS

Grant: 5 year EPSRC Advanced Fellowships
Ref. GR/A10383/01-AF
Funds awarded: 190798 pounds
Title: "A unified framework for integrable quantum field theories and ordinary differential equations"
Final marks: The research quality of this project was rated as `Internationally leading', and the overall assessment was `Outstanding' **(**See also the `International Review of Mathematical Sciences 2010', UK.)

Grant: EPSRC Support Funds Fellowships
Ref. GR/A10383/01-FSF
Funds awarded: 50000 pounds

Grant: EPSRC Visiting Professor Fellowship
Ref. GR/N27330/01
Funds awarded: 40128 pounds
Title: "Ordinary differential equations and integrable quantum field theories"
Final marks: The research quality of this project was rated as `Internationally leading', and the overall assessment was `Outstanding'. **(**The work has since been selected as a `Research Highlight' by the EPSRC.)

PARTICIPATION TO RESEARCH AND TRAINING PROGRAMS

1996-2000: TMR Network ERBCHRXCT920069,
"Integrability, non-perturbative effects, and symmetry in quantum field theory".

2002-2006: FP5 Network EUCLID, HPRN-CT-2002-00325,
"Integrable models and applications: from strings to condensed matter".

2005-2007: NATO grant PST.CLG.98042

2002-2007: Iniziativa specifica TO12

Since 2008: Iniziativa specifica PI11, FTECP, SFT

2009-2012: PRIN contract 2009KHZKRX-007

2013-2016: UniTo-SanPaolo research grant Nr TO-Call3-2012-0088,
"Modern Applications of String Theory (MAST)"

2013-2017: Local coordinator of the RAI /Physics Dept. research agreement

Since 2018: Co-Chair of the GATIS+ Network
(https://gatisplus.desy.de/scientists/)

PEER REVIEWING

Nuclear Physics B, Physics Letters A and B, Journal of Physics A, SIGMA Journal of High Energy Physics, Journal of Statistical Mechanics, Physical Review D, Physical Review Letters, Communications in Mathematical Physics.

ORGANIZATION ACTIVITY

09/2002:
Conference: "Third Meeting of the North British Mathematical Physics Seminar", Durham, UK

06/2004:
Conference: "New Frontiers in Quantum Mechanics", Shizuoka, JP

09/2004:
Conference: "CFT and Integrable Models", Bologna.

09/2006:
Conference: "5th Workshop on Pseudo Hermitian Hamiltonians in Quantum Physics", Bologna.

2005: Member of the committee for the establishment of the degree in Optics and Optometry (with Prof.s M.P. Bussa and M. Serio), UniTo.

2005-2008: Member of the "Lagrange Prize" committee for high school students, UniTo.

Since 2007: Head of the committee for the assessment of didactics, Physics Dept., UniTo

2007-2012: Member of the committee for the assessment of didactics, Faculty of Sciences, UniTo.

2008-2017: Member of the committee for the assessment of didactics, Maths Dept., UniTo.

Since 2013: Member of the Faculty Board of the Doctoral School in Physics, UniTo

2016: Member of the admission committee "Scuola di Studi Superiori Fernando Rossi ",UniTo

2015-2017: Head of the committee for the assessment of didactics, Natural Sciences, UniTo.

Since 2017: Member of "Commissione Spazi", Physics Dept., UniTo.

Since 2017: Board member of "Commissione Didattica Paritetica (CDP)", UniTo.

2017: Member of the admission committee "Scuola di Studi Superiori Fernando Rossi", UniTo

THESIS PROJECTS AND POST-DOCS

TFA and First level Laurea Thesis: 23

Master Thesis: 18 (14 winners of PhD positions, 1 Best Thesis Prize, 2 A. Molinari Prizes).

PhD students: 5 (1 Italian-French University award for PhD mobility with ENS Paris).

Post-Docs: 5

RECENT TALKS (2010-2018)

28/2/- 5/3/2010:
Conference: "Physics in the Plane: from condensed matter to strings"**,**
Place: Ecole de Physique des Houches, Les Houche, France
Title: "AdS/CFT and the Thermodynamic Bethe Ansatz".

28/5/- 5/5/2010:
Conference: "Analyic and Algebraic Methods V"**,**
Place: Villa Lanna, Prague, Czech Republic
Title: "PT symmetry breaking and exceptional points".

14-16/6/2010:
Conference: "Developments in quantum integrable systems",
Place: RIMS, Kyoto, Japan
Title 1: "The ODE/IM correspondence and its applications",
Title 2: "Thermodynamic Bethe Ansatz and the AdS/CFT correspondence".

28-2/7/2010:
Conference: "Integrability in Gauge and String Theories 2010 (IGST10)",
Place: Nordita, Stockholm, Sweden
Title: "TBA and functional relations for the AdS/CFT correspondence".

25-28/9/2011:
Conference: "PTQM 2011 symposium",
Place: Heidelberg University, Germany
Title: "Bethe Ansatz and nonlinear wave equations".

16-19/4/2012:
Conference: "British Maths workshop 2012"**,**
Place: Kent University, UK
Title: "The Bethe Ansatz and the Bullough-Dodd equation".

19-23/8/2013:
Conference: "Integrability in Gauge and String Theories 2013"**,**
Place: Utrecht, NL
Title: "Nambu-Goto string and quark-anti-quark potential from TBA".

2-6/7/2013:
Conference: "Pseudo-Hermitian Hamiltonians in Quantum Physics",
Place: Koc University, Istanbul, Turkey
Title: "Spectral singularities in perturbed conformal field theory".

16-20/12/2013:
Conference: "CFT and Integrability: in memory of Alexei Zamolodchikov",
Place: Sogang University, Korea
Title: "The Nambu-Goto string spectrum and the TBA".

15-18/9/2014:
Conference: "CFT and Integrable Models",
Place: Bologna, Italy
Title: "The Quantum Spectral Curve**".**

13-15/5/2015:
Conference: "Flux tubes",
Place: Perimeter Institute for Theoretical Physics, Waterloo, Canada
Title: "Quark-anti-quark potential and the TBA".

3/8-14/9/2015:
Conference: "Hidden symmetries and integrability methods in super Yang-Mills theories and their dual string theories",
Place: CRM, Montreal, Canada
Title: "The Quantum Spectral Curve of the ABJM model".

9/10-10/10/2015:
Conference: "Mini-conference on Statistical Physics",
Place: SISSA, Trieste, Italy,
Title: "A new approach to the finite temperature Hubbard model".

22/9/2016:
Place: Maths Department, King's College London, London, UK
Title: "Non-Wilsonian RG flows and the TbarT perturbation of 2D quantum field theories".

17/7-21/7/2017:
Conference: "Integrability in gauge theory",
Place: Ecole Normale Superiore, Paris, France
Title:"CDD ambiguity and irrelevant deformations of 2D QFT".

25/7-4/8/2017:
Conference: "Exact methods in low dimensional statistical physics",
Place: Cargese, France
Title: "TbarT perturbation of 2D QFTs".

29/9-30/9/2017:
Conference: "Mini-conference on Statistical Physics",
Place: SISSA, Trieste, Italy
Title: "TbarT perturbation of 2D Quantum Field Theories".

LECTURES AT SCHOOLS AND WORKSHOPS

11/1999: 4 Lectures,
Title: “Integrable models and Thermodynamic Bethe Ansatz”,
Place: APCTP, Seoul, Korea

12/2000: 3 Lectures,
Title: “The ODE/IM correspondence”,
Place: SISSA, Trieste, Italy

06/2003: 2 Lectures,
Title: “The thermodynamic Bethe Ansatz”,
Conference: TMR school on Integrable Models,
Place: Budapest, Hungary

05/2005: 4 Lectures,
Title: “Differential equations and Integrable models”,
Conference: EU network EUCLID, Spring School ``New Paths in Theoretical Physics",
Place: SISSA, Trieste, Italy

07/2007: 2 Lectures,
Title: “The ODE/IM correspondence”,
Conference: Workshop on the Geometric Langlands Program,
Place: Desy, Hamburg, Germany

01/2008: 2 Lectures,
Title: “Orientation course on PT-Symmetric quantum mechanics”,
Conference: Homi Bhabha Centenary Conference on `Non-Hermitian Hamiltonians in Quantum Physics',
Place: Mumbai, India

07/2014: 3 Lectures,
Title: “Novel approaches to finite-size effects in integrable models”,
Conference: Summer School on Quantum Groups and Integrability –Algebraic, Analytic and Geometric Aspects,
Place: Desy, Hamburg, Germany

02/2017: 3 Lectures,
Title: “ODE/IM correspondence”,
Conference: Young Researchers Integrability School and Workshop 2017,
Place: Dublin, Ireland

RESEARCH TOPICS

Conformal field theory, Exact S-matrix theory, Integrable quantum field theories with and without boundaries, Integrable lattice models, Thermodynamic Bethe Ansatz, The correspondence between Ordinary Differential Equations and Integrable Models, Integrability and the AdS/CFT correspondence, Functional relations and Cluster Algebra.

BOOKS

Title: "PT-symmetric Quantum Mechanics",
Authors: C. M. Bender et al.
Year: 2018
Publisher: Imperial College Press, 57 Shelton Street, Covent Garden, London, UK

PUBLICATIONS (only peer-reviewed journals)

1) A. Koubek, G. Mussardo, R. Tateo, "Bootstrap trees and consistent S matrices", Int. J. Mod. Phys. A7 (1992) 3435-3446;

2) F. Ravanini, R. Tateo, A. Valleriani, "Dynkin TBA's", Int. J. Mod.Phys. A8 (1993) 1707-1728;

3) F. Ravanini, R. Tateo, A. Valleriani, "A new family of diagonal ADE-related scattering theories", Phys. Lett. B293 (1992) 361-366

4) R. Tateo, "The sine-Gordon model as $SO(n)_1$ $SO(n)_1$ /$SO(n)_2$ -perturbed coset theory and generalizations", Int. J. Mod. Phys. A10 (1995) 1357-1376

5) F. Ravanini, M. Stanishkov, R. Tateo, "Integrable deformations of CFT with complex parameter: The M(3,5) model and its generalizations", Int. J. Mod. Phys. A11 (1996) 677-697

6) F. Gliozzi, R. Tateo, "ADE functional dilogarithm identities and integrable models", Phys. Lett B348 (1995) 84-88

7) R. Tateo, "New functional dilogarithm identities and sine-Gordon Y-system", Phys. Lett B355 (1995) 157-164

8) F. Gliozzi, R. Tateo, "Thermodynamic Bethe ansatz and threefold triangulations", Int. J. Mod. Phys. A 11 4051-4064 , 1996

9) P. Dorey, R. Tateo, K.E. Thompson, "Massive and massless phases in self-dual Z(N) spin models: some exact results from the thermodynamic Bethe ansatz", Nucl. Phys. B 470 (1996) 317-368

10) P. Dorey, R. Tateo, "Excited states by analytic continuation of TBA equations", Nucl. Phys.

B482 (1996) 639

11) P. Dorey, R. Tateo, “Excited states in some simple perturbed conformal field theories”, Nucl. Phys. B515 (1998) 575

12) P. Dorey, A. Pocklington, R. Tateo, G.M.T. Watts, “TBA and TCSA with boundaries and excited states”, Nucl. Phys. B525 (1998) 641

13) P. Dorey, R. Tateo, G.M.T. Watts, “Generalizations of the Coleman-Thun mechanism and boundary reflection factors”, Phys. Lett. B448 (1999) 249

14) P. Dorey, P. Provero, R. Tateo, S. Vinti, “On the phase diagram of the discrete Z(6) spin models”, J. Phys. A32 (1999) L151-L158

15) P. Dorey, R. Tateo, “Anharmonic oscillators, the Thermodynamic Bethe Ansatz, and nonlinear integral equations”, J. Phys. A32 (1999) L419-L425

16) R. Caracciolo, F. Gliozzi, R. Tateo, “A topological invariant of RG flows in 2-D integrable Quantum Field Theories”, Int. J. Mod. Phys.B13 (1999) 2927

17) M. Caselle, R. Tateo, S. Vinti, “Universal amplitude ratios in the 2-D four state Potts model”, Nucl. Phys. B562 (1999) 549-566

18) P. Dorey, R. Tateo, “On the relation between Stokes multipliers and the T-Q systems of Conformal Field Theory”, Nucl. Phys. B563 (1999) 573-602

19) P. Dorey, I. Runkel, R. Tateo, G.M.T. Watts, “g-function flow in perturbed boundary Conformal Field Theories”, Nucl. Phys. B578 (2000) 85-122

20) P. Dorey, R. Tateo, “Differential equations and integrable models: the SU(3) case”, Nucl. Phys. B571 (2000) 583-606

21) P. Dorey, C. Dunning, R. Tateo, “New families of flows between two-dimensional conformal field theories”, Nucl. Phys. B578 (2000) 699-727

22) P. Dorey, M. Pillin, R. Tateo, G.M.T. Watts, “One-point functions in perturbed boundary conformal field theories”, Nucl. Phys. B594 (2001) 625-659

23) P. Dorey, C. Dunning, R. Tateo, “Differential equations for general SU(n) Bethe ansatz systems”, J. Phys. A33 (2000) 8427-8442

24) P. Dorey, C. Dunning, R. Tateo, “Spectral equivalences, Bethe ansatz equations, and reality properties in PT-symmetric quantum mechanics”, J. Phys. A34 (2001) 5679-5704

25) P. Dorey, C. Dunning, R. Tateo, “Supersymmetry and the spontaneous breakdown of PT symmetry”, J. Phys. A34 (2001) L391

26) P. Dorey, A.Pocklington, R.Tateo, “Integrable aspects of the scaling q-Potts models I: bound states and bootstrap closure”, Nucl. Phys. B661 (2003)425-463

27) P. Dorey, A.Pocklington, R.Tateo, “Integrable aspects of the scaling q-Potts models II: finite-

size effects", Nucl. Phys. B661 (2003) 464-513

28) A. Babichenko, R. Tateo, "Thermodynamic Bethe ansatz for the AII sigma-models", Phys. Lett. B573, 239 (2003).

29) P. Dorey, J. Suzuki, R. Tateo, "Finite lattice Bethe ansatz systems and the Heun equation", J. Phys. A37, 2047 (2004)

30) P. Dorey, D. Fioravanti, C. Rim, R. Tateo, "Integrable quantum field theory with boundaries: The exact g-function", Nucl. Phys. B696, 445 (2004)

31) P. Dorey, A. Millican-Slater and R. Tateo, "Beyond the WKB approximation in PT-symmetric quantum mechanics", J. Phys. A38:1305 (2005)

32) P. Dorey, A. Lishman, C. Rim, R. Tateo, "Reflection factors and exact g functions for purely elastic scattering theories", Nucl. Phys. B744:239-276,2006.

33) P. Dorey, C. Dunning, D. Masoero, J. Suzuki, R. Tateo, "Pseudo-differential equations, and the Bethe ansatz for the classical Lie algebras", Nucl. Phys. B772:249-289,2007.

34) P. Dorey, C. Dunning, R. Tateo, "The ODE/IM correspondence ", J. Phys. A40:R205,2007.

35) P. Dorey, C. Dunning, F. Gliozzi, R. Tateo, "On the ODE/IM correspondence for minimal models", J. Phys. A41:132001,2008.

36) D. Bombardelli, D. Fioravanti, R. Tateo, "Thermodynamic Bethe Ansatz for planar AdS/CFT: a proposal", J. Phys. A42 , 375401 (2009).

37) P. Dorey, C. Dunning, A. Lishman, R. Tateo, "PT symmetry breaking and exceptional points for a class of inhomogeneous complex potentials", J. Phys. A42, 465302 (2009) .

38) P. Dorey, C. Rim, R. Tateo, "Exact g-function flow between conformal field theories", Nucl. Phys. B834:485- 501 (2010).

39) D. Bombardelli, D. Fioravanti, R. Tateo, "TBA and Y-system for planar AdS(4) /CFT(3) ", Nucl. Phys. B834:543-561 (2010).

40) A. Cavaglià, D. Fioravanti, R. Tateo, "Extended Y-system for the AdS(5) /CFT(4) correspondence", Nucl. Phys. B843: 302 (2011).

41) T. Nakanishi, R. Tateo, "Dilogarithm identities for sine-Gordon and reduced sine-Gordon Y-systems", SIGMA 6: 085 (2010).

42) P. Dorey, R. Tateo, R. Wilbourne, "Exact g-function flows from the staircase model", Nucl. Phys. B843: 724 (2011).

43) P. Dorey, C. Dunning, R. Tateo, "Quasi-exact solvability, resonances and trivial monodromy in ordinary differential equations", J. Phys. A45 , 444013 (2012).

44) P. Dorey, S. Faldella, S. Negro, R. Tateo, "The Bethe Ansatz and the Tzitzéica-Bullough-Dodd equation", Phil. Trans. A371 (2013) 23.

45) M. Caselle, D. Fioravanti, F. Gliozzi, R. Tateo, “Quantisation of the effective string with TBA”, JHEP 1307, 071 (2013).

46) A. Cavaglià, D. Fioravanti, R. Tateo, “Discontinuity relations for the AdS(4) /CFT(3) correspondence”, Nucl. Phys. B 877, 852 (2013).

47) A. Fabbri, D. Fioravanti, S. Piscaglia, R. Tateo, “Exact results for the low energy AdS(4) x CP(3) string theory”, JHEP 1311, 073 (2013), [arXiv:1308.1861 [hep-th]].

48) A. Cavaglià, D. Fioravanti, N. Gromov, R. Tateo, “The Quantum Spectral Curve of the ABJM theory”, Phys. Rev. Lett. 113 (2014) no.2, 021601.

49) A. Cavaglià, M. Cornagliotto, M. Mattelliano, R. Tateo, “A Riemann-Hilbert formulation for the finite temperature Hubbard model”, JHEP 1506 (2015) 015.

50) L. Anselmetti, D. Bombardelli, A. Cavaglià, R. Tateo, ``12 loops and triple wrapping in ABJM theory from integrability", JHEP 1510 (2015) 117.

51) A. Cavaglià, S. Negro, I. Szécsényi, R. Tateo, "TbarT-deformed 2D Quantum Field Theories", JHEP 1610, 112 (2016).

52) D. Bombardelli, A. Cavaglià, D. Fioravanti, N. Gromov, R. Tateo, `The full Quantum Spectral Curve for AdS(4)/CFT(3)", JHEP 1709, 140 (2017).

53) D. Bombardelli, A. Cavaglià, R.Conti, R. Tateo, “Exploring the spectrum ofplanar AdS(4)/CFT(3)”, JHEP 1804 (2018) 117

Curriculum dell'attività scientifica e didattica

Informazioni generali

Nome e Cognome:	Roberto Sacchi
Luogo e Data di Nascita:	Torino, 20 novembre 1966
E–mail:	roberto.sacchi@unito.it
Inquadramento Professionale:	Professore di II fascia presso l'Università di Torino
Settore Scientifico Disciplinare:	FIS/07 – Fisica Applicata
Dipartimento di afferenza:	Dipartimento di Fisica

Formazione e carriera professionale

- 1985: Maturità scientifica presso il Liceo G. Ferraris di Torino.
- 1992: Laurea in Fisica presso l'Università di Torino con votazione 110/110 e lode. Titolo della tesi: "Studio dell'accettanza di uno spettrometro per protoni diffusi in avanti ad HERA".
- 1996: Dottorato di Ricerca in Fisica presso l'Università di Torino. Titolo della tesi: "Studio di eventi diffrattivi con uno spettrometro per protoni diffusi in avanti a ZEUS".
- 1997 – 1998: Borsa post-doc dell'Istituto Nazionale di Fisica Nucleare per il biennio per svolgere attività di ricerca presso i laboratori DESY di Amburgo.
- 1998 – 1999: Post-Doctoral Research Scientist presso la Columbia University di New York.
- 1999 – oggi: Ricercatore Universitario dal 16 novembre 1999, con inquadramento nel settore scientifico disciplinare FIS/07, presso la Facoltà di Medicina e Chirurgia, Università di Torino; conferma nel ruolo conseguita il 17 novembre 2002.
- 2005 – 2015i: Professore Aggregato.
- Abilitazione Scientifica Nazionale, conseguita nella tornata 2012, per professore di II fascia, settori concorsuali 03/B3 (Fisica applicata) e 02/A1 (Fisica Sperimentale delle Interazioni Fondamentali).
- Giugno 2015: vincitore di una prova comparativa per un posto di Professore di II fascia, settore concorsuale 02/B3 (Fisica Applicata) presso il Dipartimento di Fisica di Torino.

Attività di ricerca e pubblicazioni scientifiche

Nel periodo compreso tra la Laurea ed il 2006 ho svolto attività di ricerca esclusivamente su argomenti di fisica sperimentale delle alte energie, all'interno delle due collaborazioni scientifiche internazionali ZEUS e CMS. Successivamente sono passato al campo della fisica medica, in particolare dell'adroterapia con fasci di protoni e ioni carbonio, collaborando con il gruppo di fisica medica di Torino su diversi progetti nei quali ho potuto sfruttare in modo proficuo le competenze hardware e software acquisite in precedenza.

Nel seguito presento un breve sunto delle attività svolte attinenti o correlate al settore concorsuale (i riferimenti sono alle pubblicazioni presentate, il cui elenco è allegato alla domanda).

1994 – 2006: Attività di ricerca nelle Collaborazioni ZEUS e CMS

In qualità di membro delle collaborazioni internazionali ZEUS (dal 1993) e CMS (dal 2000) ho svolto le seguenti attività di sviluppo e costruzione di rivelatori:

- installazione e messa in funzione dello spettrometro a microstrip di silicio LPS, con responsabilità nello sviluppo di un sistema di trigger, dei programmi di simulazione e di ricostruzione del rivelatore;
- partecipazione ai test su fascio dei prototipi delle camere di rivelazione di muoni per l'esperimento CMS, e all'analisi dei dati raccolti (rif. 1,2);
- costruzione di 40 camere di rivelazione di muoni di ampia superficie di CMS, e alla loro successiva installazione e commissioning nell'area sperimentale. In tale lavoro, che si è protratto dal 2000 al termine del 2007, sono stato responsabile dello sviluppo dei sistemi di automazione per le diverse operazioni della linea di produzione, inclusa una linea installata a Dubna (Russia), dei programmi di misura ottica delle posizioni dei riferimenti geometrici e dei fili anodici delle camere e ho coordinato i turni di costruzione e test con raggi cosmici dal giugno 2004 ad aprile 2006 presso il laboratorio tecnologico dell'INFN di Torino (rif. 3,5).
- sviluppo e realizzazione, in qualità di responsabile, dei circuiti multistrato per l'elettronica di front-end, dei test di danneggiamento dell'elettronica di front-end e del sistema di alimentazione a bassa tensione del rivelatore di vertice al silicio MVD (rif.4);

Ho svolto anche una intensa attività di analisi, oggetto di 5 pubblicazioni a nome della collaborazione ZEUS e coordinato nel biennio 2000-2001 il gruppo di Fisica Esotica (prodotti 7 articoli, 5 tesi di dottorato e 12 contributi a conferenze internazionali). Ho anche partecipato a *Editorial Boards* per la stesura di 7 articoli di collaborazione ZEUS.

2007 – oggi: Attività di ricerca in Fisica Medica

A partire dal 2007 ho iniziato a collaborare con il gruppo di Fisica Medica dell'Università e INFN di Torino su progetti di ricerca nell'ambito dell'adroterapia, divenendo in breve tempo l'ambito nel quale svolgo per intero la mia attività. La produzione scientifica in fisica medica, pertanto, inizia a partire dall'anno successivo.

Il mio contributo è riassunto nei punti che seguono:

- sono stato responsabile della definizione delle specifiche e della realizzazione, affidata ad una ditta esterna, di un modulo software implementato a CNAO per l'adattamento dei piani di trattamento alle specifiche della macchina. In tale ambito ho implementato un algoritmo di ottimizzazione delle percorso di scansione per sistemi di deposizione di dose con scansione attiva (rif.6);
- ho coordinando l'analisi dei dati raccolti nei test di linearità e velocità del sistema magnetico di scansione di CNAO (rif. 7);
- ho analizzato i dati raccolti dalla camera monitor di fascio MOPI, sviluppata dal gruppo di Torino per la linea di trattamento CATANA, al fine di determinare la stabilità del profilo del fascio durante i trattamenti clinici (rif.8);
- ho partecipato nel biennio 2010-2011 all'esperimento FIRST per la misura delle sezioni d'urto di frammentazione di ioni carbonio alle energie di interesse per l'adroterapia. In tale esperimento ho lavorato allo sviluppo del sistema di acquisizione, responsabilità del gruppo di Torino, e in particolare sono stato responsabile del sistema di trigger utilizzato nella campagna di misure (rif. 9,10);
- ho coordinato i test e l'analisi dei dati raccolti presso il laboratorio svizzero del PSI, con un fascio terapeutico, di due delle 10 camere monitor di fascio sviluppate a Torino per il centro di adroterapia CNAO di Pavia (rif.11);
- ho contribuito, in qualità di responsabile del gruppo di Torino, alla realizzazione e all'integrazione del sistema di Dose Delivery a scansione attiva delle quattro linee di trattamento del centro di adroterapia CNAO di Pavia (rif.12). Ho inoltre coordinato l'analisi dei dati raccolti nei trattamenti

dei primi due anni di attività del centro, oggetto di una tesi di Dottorato in Fisica di cui sono stato relatore e di un articolo in via di sottomissione a una rivista;

- dal 2013 sono responsabile di un Work Package dell'esperimento RDH dell'INFN per lo sviluppo di una camera monitor innovativa per fasci terapeutici di alta intensità, camera che è già stata realizzata e parzialmente caratterizzata. A tal fine si è resa necessaria una modifica all'elettronica di front-end per estendere il range dinamico in ingresso al chip di lettura. La caratterizzazione del front-end è oggetto di un articolo in via di sottomissione a una rivista;
- sulla base degli studi riportati al punto precedente, ho proposto all'interno del progetto premiale INFN 2013 IRPT, valutato e approvato dal MIUR con un finanziamento di circa 7 M€, un Work Package per la realizzazione di un nuovo chip di front-end che incrementi il range dinamico del chip sviluppato per CNAO di circa due ordini di grandezza. Sono attualmente impegnato nella coordinazione di tale lavoro, svolto in collaborazione con il gruppo di microelettronica dell'INFN di Torino.

Altre informazioni sull'attività di ricerca

Ai fini della valutazione dell'attività di ricerca, facendo riferimento agli elementi di valutazione esplicitati nel bando, aggiungo le informazioni che seguono.

Attività di organizzazione, direzione e coordinamento di gruppi di ricerca

- 2000 – 2001: coordinatore del gruppo di Fisica Esotica della Collaborazione ZEUS;
- 2009 – oggi: coordinatore eletto della Commissione Scientifica Nazionale 5 dell'INFN (Ricerche Tecnologiche ed Interdisciplinari) per la sezione di Torino, mandato che è stato riconfermato nel gennaio 2012 fino al termine del 2015;
- 2009 – oggi: coordinatore del gruppo CNAO dell'Università e INFN di Torino;
- 2010 – 2013: responsabile del Work Package 4 del progetto *Neutron and x-ray tomography and imaging for cultural heritage (neu_ART)*;
- 2013 – oggi: responsabile del Work Package 7 del progetto *Research and Development in Hadrontherapy (RDH)* finanziato dalla Commissione 5 dell'INFN per il triennio 2013-2015;
- 2014 – oggi: responsabile del Work Package 6 del progetto premiale MIUR 2012 dell'INFN *Innovation in Radio and Particle Therapy* (IRPT).
- 2017 – oggi: responsabile locale dell'esperimento MoVeIt finanziato dalla Commissione 5 dell'INFN per il triennio 2017-2019

Titolarità di brevetti

– Cotitolare di un brevetto d'invenzione presso l'Ufficio Brevetti della Camera di Commercio di Torino, dal titolo "*Dispositivo per la misura simultanea e in tempo reale dell'energia e del flusso di un fascio monoenergetico di adroni di bassa energia*";

– Cotitolare di un brevetto d'invenzione presso l'Ufficio Brevetti della Camera di Commercio di Torino, dal titolo "*Disposizionecircuitale per acquisizione di segnali da un apparato per la misura di fasci di particelle cariche per radioterapia esterna*".

Partecipazione in qualità di relatore a congressi e convegni

Sono stato relatore a 15 conferenze e workshop internazionali, di cui 3 relazioni su invito, prevalentemente su argomenti di fisica delle alte energie e di sviluppo di rivelatori.

A causa della limitatezza di fondi a disposizione del gruppo di Fisica Medica, abbiamo stabilito che le relazioni orali, fatte a nome di tutto il gruppo, siano attribuite prioritariamente a studenti di dottorato e borsisti. Pertanto, pur non essendo stato relatore, gli argomenti di ricerca di fisica medica dei quali ho

avuto responsabilità diretta sono stati oggetto di 16 abstract accettati per comunicazioni orali e di 14 poster presentati a conferenze.

Indicatori bibliometrici

Riporto per completezza nel seguito gli indicatori bibliometrici, esplicitati tra gli elementi di valutazione nel bando, ottenuti tramite la banca dati SCOPUS

a) delle 12 pubblicazioni presentate, con riferimento alla numerazione dell'elenco allegato alla domanda:

Pubblicazione												
	1	2	3	4	5	6	7	8	9	10	11	12
Anno	2002	2004	2007	2007	2009	2009	2010	2011	2012	2012	2013	2015
Impact Factor	1,316	1,316	1,316	1,316	1,316	3,012	1,316	1,849	1,316	1,526	1,316	3,012

b) di tutta la mia produzione scientifica:

Numero totale di pubblicazioni:	607
Numero totale di citazioni:	19730
Numero medio di citazioni per pubblicazione:	32,5
Indice di Hirsch:	66

Attività didattica, di didattica integrativa e di servizio agli studenti

Attività didattica

A partire dall'anno accademico 2000/2001 ho svolto un'attività didattica intensa e continuativa presso la Facoltà di Medicina, ora Scuola di Medicina, coprendo i seguenti corsi per affidamento:

Diplomi Universitari e Lauree Triennali delle Professioni sanitarie:

- Modulo di *Fisica Applicata*, C.d.L. in Infermieristica, sede di Cuneo (a.a. 2000/2001), sede di Orbassano - S. Luigi (a.a. 2000/2001 – 2001/2002), sede di Torino (a.a. 2001/2003 – oggi) e sede di Aosta (2008/2009 – oggi);
- Modulo di *Fisica Applicata alla Medicina*, C.d.L. in Dietistica (a.a. 2002/2003 – 2010/2011);
- Modulo di *Fisica Applicata*, C.d.L in Tecniche di Neurofisiopatologia, Audioprotesi e Tecniche Audiometriche (a.a. 2002/2003 – 2010/2011);
- Modulo di *Fisica Applicata*, C.d.L. in Igiene Dentale (a.a. 2004/2005, 2006/2007 e 2007/2008);
- Corso di *Fisica Applicata*, C.d.L. in Audioprotesi, canale straordinario in modalità di "formazione a distanza" attraverso l'utilizzo di una piattaforma informatica per l'e-learning (a.a. 2006/2007 – 2008/2009);
- Modulo di *Fisica Applicata 1*, C.d.L in Dietistica, Tecniche di Neurofisiopatologia, Audioprotesi, Tecniche Audiometriche e Igiene Dentale (a.a. 2011/2012 – 2012/2013);
- Modulo di *Fisica Applicata 2*, C.d.L. in Dietistica (a.a. 2011/2012 – oggi);
- Modulo di *Fisica Applicata 2*, C.d.L. in Audioprotesi e Tecniche Audiometriche (a.a. 2011/2012 – oggi);

Corsi di Laurea Magistrale

- Modulo di *Fisica Applicata*, C.d.L. in Odontoiatria e Protesi Dentaria (a.a. 2013/2014 – oggi);

Scuole di Specializzazione

- Corso di *Informatica*, Scuola di Specializzazione in Audiologia e Foniatria (a.a. 2000/2001 – 2005/2006 e 2007/2008);
- Corso di *Tecniche di Analisi del Segnale*, Scuola di Specializzazione in Audiologia e Foniatria (a.a. 2000/2001 – 2005/2006);
- Corso di *Basi Fisiche della Diagnostica per immagini con Fotoni*, Scuola di Specializzazione in Fisica Medica (a.a. 2009/2010 – oggi);

La tabella che segue riassume per ogni anno accademico, il numero di corsi che ho coperto, il numero complessivo di studenti iscritti ai corsi e il numero totale di ore di didattica frontale e di attività didattiche elettive (ADE).

Anno Accademico	Numero di corsi	Numero di studenti	Numero di ore	Anno Accademico	Numero di corsi	Numero di studenti	Numero di ore
2000/2001	3	150	75	**2008/2009**	5	230	131 (+12 ADE)
2001/2002	4	150	120	**2009/2010**	5	200	129 (+12 ADE)
2002/2003	4	130	100	**2010/2011**	5	200	136 (+12 ADE)
2003/2004	4	130	106	**2011/2012**	6	280	111 (+10 ADE)
2004/2005	4	160	96	**2012/2013**	6	280	111 (+10 ADE)
2005/2006	4	140	126	**2013/2014**	6	240	152 (+10 ADE)
2006/2007	4	180	109	**2014/2015**	6	240	152 (+10 ADE)
2007/2008	5	180	110				

Attività di didattica integrativa e di servizio agli studenti

- Ho svolto le attività di didattica elettiva (ADE) *Le radiazioni ed il loro impiego nelle moderne tecniche di diagnostica e di terapia medica* presso il C.d.L. in Infermieristica e *Matematica di base* presso il C.d.L. in Odontoiatria e Protesi Dentaria;
- A partire dal 2000 sono membro della *Commissione di esame* del corso di Fisica presso il C.d.L. in Medicina e Chirurgia, sede di Torino (can. A) e sede del S.Luigi. Nell'ambito di tali corsi ho anche tenuto esercitazioni in aula, assistito studenti e collaborato allo svolgimento di attività didattiche elettive in laboratorio;
- A partire dal 2003 mi sono impegnato attivamente in vari progetti finalizzati all'introduzione e allo sviluppo delle tecniche di formazione a distanza nella didattica della Facoltà di Medicina e Chirurgia. Ho partecipato ai lavori della Commissione e–learning della Facoltà (2003–2006), seguendo il corso di formazione *Metodiche e tecniche della formazione a distanza* organizzato dall'Ing. G. Trentin del Centro di Metodologie Didattiche del CNR di Genova (maggio 2003). Ho inoltre realizzato un modulo didattico di Fisica basato su tecniche di e-learning, residente sulla piattaforma informatica dell'Università, che ho utilizzato nel percorso straordinario per la Laurea in Tecniche Audioprotesiche;
- Sono membro del *Consiglio di Presidenza* e della *Commissione Didattica* del C.d.L. in Infermieristica, sede di Torino, e della *Commissione Didattica* del C.d.L. in Infermieristica, sede di Aosta;
- Sono stato coordinatore di diversi corsi integrati: attualmente coordino i corsi integrati di *Funzionamento del corpo* Umano (C.d.L. in Infermieristica di Aosta), *Strumentazione Biomedica* (C.d.L. in Tecniche Audiometriche, Audioprotesiche) e *Fisica e Bioingegneria Informatica* (C.d.L. in Odontoiatria e Protesi Dentaria);
- Sono stato relatore di 6 tesi di laurea triennale del Corso di Laurea in Audioprotesi, 1 tesi di laurea triennale del Corso di Laurea in Fisica, 4 tesi di laurea specialistica in Fisica e una tesi di Dottorato in Fisica, tutte su argomenti di fisica applicata alla medicina. Sono inoltre stato il supervisore scientifico di 9 tesi di Dottorato o PhD su argomenti di fisica delle alte energie di altre.
- Sono coautore del libro di testo ad uso dei corsi di laurea triennale della Scuola di Medicina V.Monaco, R.Sacchi, A.Solano, *Elementi di Fisica*, McGraw-Hill 2007;

Torino, 3 ottobre 2018

Firma Roberto Sacchi

Curriculum Vitae et Studiorum per la pubblicazione su WEB

Dr. Alessandra Filippi

Profilo: Ricercatrice in fisica sperimentale nucleare ed adronica alle energie intermedie e basse, dedicata in particolare alla spettroscopia dei mesoni leggeri e allo studio della fenomenologia di reazioni con particelle dotate di stranezza in esperimenti ad acceleratori in diversi Laboratori Internazionali. Il campo di attività è l'analisi dei dati e l'interpretazione fisica dei risultati ottenuti e l'elaborazione di codici di simulazione per processi di fisica e rivelatori. A ciò si sono aggiunte attività di monitoraggio del funzionamento di alcuni rivelatori (calibrazioni, procedure di allineamento) nei singoli esperimenti. Ha ricoperto e ricopre attualmente ruolo di coordinatore delle analisi di fisica ed altri ruoli di responsabilità scientifica. Riveste attualmente responsabilità istituzionali e di gestione finanziaria nell'ambito dell'INFN. Ha sviluppato competenze di gestione di sistemi di calcolo di medie dimensioni.

Educazione:

Dottorato di Ricerca in Fisica, Università di Pavia, Pavia (Italy) Mar 1994 - Mar 1997
Argomento della tesi: spettroscopia dei mesoni leggeri
Titolo: Studio dello stato $f_0(1500)$ nell'annichilazione antineutrone-protone con lo spettrometro OBELIX (in italiano).
Titolo conseguito a Roma, presso l'Università La Sapienza, il 16 luglio 1997

Diploma di Laurea in Fisica, Università di Torino, Torino (Italy) 1986 – 1991
Argomento della tesi: studio di segnali da materia oscura supersimmetrica
Titolo: Flussi di neutrini prodotti da materia oscura (neutralini) accumulata nella Terra (in italiano).
Titolo conseguito presso l'Università di Torino il 5 ottobre 1991
Votazione: 110/110 e lode e menzione onorevole

Diploma di maturità, Liceo Scientifico E. Majorana, Torino (Italy) 1986
Votazione: 60/60

Lingue conosciute:

Italiano: madrelingua
Inglese: orale fluente e scrittura/lettura con ottima competenza
Tedesco: orale, scrittura e lettura con discreta competenza
Francese e Spagnolo: orale e lettura a livello scolastico

Conoscenze informatiche:

Linguaggi di programmazione e scripting:

- Fortran, C, C++, Java, Python
- pacchetti di analisi dati (ROOT, ROOfit, hbook, higz), calcolo simbolico e statistica (Mathematica), gestione e controllo di sistemi (LabView), MS Office

Sistemi operativi:

- Linux (diversi ambienti), Mac OS-X, Windows 10/7/XP/2000/NT, UNIX (DEC, IBM, HP, Sun), VAX/VMS, IBM-VM
- Conoscenze di gestione di sistemi per cluster VMS e linux, Cloud computing

Esperienze lavorative:

Istituto Nazionale di Fisica Nucleare (INFN) 1/7/2017–presente
Posizione: **Ricercatrice a tempo indeterminato di II livello presso la sezione di Torino**

Istituto Nazionale di Fisica Nucleare (INFN) 1/1/1997-30/6/2017
Posizione: **Ricercatrice a tempo indeterminato di III livello presso la sezione di Torino**

Istituto Nazionale di Fisica Nucleare (INFN) 15/12/1996 – 31/12/1996
Posizione: **Ricercatrice a tempo determinato (ex-art. 36) presso la sezione di Torino**

Istituto Nazionale di Fisica Nucleare (INFN) 14/4/1992 – 6/3/1994
Posizione: **Vincitrice di borsa di studio per neolaureati presso la sezione di Torino**

Attività scientifica negli esperimenti cui ha preso (o sta prendendo) parte *(descrizione dettagliata in allegato)**:***

- ***Esperimento NA62*** (CERN, Switzerland) 15/03/2016–presente
  - Analisi dei dati per la ricerca di materia oscura (dark photon) nel decadimento dei mesoni K
  - Studio di procedure di tracking per eliminazione di eventi di fondo generati dall'interazione dei K nei rivelatori di tracking al Silicio
- ***Esperimento CLAS*** (JLAB, Newport News, USA) 20/11/2013–presente
  - Analisi dei dati di fotoproduzione (esperimento g11-CLAS6) per studi di spettroscopia mesonica in canali con stranezza
  - Procedure di calibrazione del *Forward Tagger* del rivelatore CLAS12
- ***Esperimento HPS*** (JLAB, Newport News, USA) Lug 2013–presente
  - Allineamento software del rivelatore di vertice a microstrip di silicio (*SVT*)
  - Partecipazione alla realizzazione del sistema di calibrazione mediante LED del calorimetro elettromagnetico
- ***Esperimento BaBar*** (SLAC, Stanford, USA) 30/11/2011–presente
  - Analisi dati (produzione di charmonio oltre la soglia $D\bar{D}$, produzione di barioni nel decadimento della Υ)
  - Curatrice del progetto *Documentation and Wiki*
- ***Esperimento PANDA*** (GSI, Darmstadt, Germany) 1/1/2003–presente
  - Attività di simulazione e R&D (rivelatore a pixel)
- ***Esperimento FINUDA*** (LNF, Frascati, Italy) 1/1/1993–2016
  - Gestore dei codici di simulazione e ricostruzione dati
  - Responsabile della calibrazione delle camera a deriva, partecipazione alla codifica delle procedure per l'allineamento dei rivelatori di vertice e del monitoraggio dei rivelatori nel corso delle prese dati
  - Analisi dati e simulazioni: assorbimento dei K^- in stati finali YN, studio decadimenti rari di ipernuclei leggeri
- ***Esperimento COSY-TOF*** (FZ Jülich, Germany) 15/12/1997–2002
  - Analisi dati (stato finale $pK^+\Lambda$ in collisioni proton-protone) e simulazioni
- ***Esperimento OBELIX*** (CERN, Switzerland) 1/1/1992–2004
  - Analisi dati (spettroscopia di mesoni scalari leggeri e studio della dinamica dell'annichilazione nelle annichilazioni di antineutroni), simulazioni

Posizioni di responsabilità ed incarichi istituzionali:

Responsabilità scientifiche:

- Membro del *Publication Board* dell'esperimento PANDA Ott. 2016 – presente
- Membro dello *Speakers' Board* dell'esperimento PANDA Dic 2013–Dic 2015
- Coordinatore del *Documentation Working Group* dell'esperimento BaBar Lug 2012–presente
- Membro/*chair* di *Review Committees* negli esperimenti BaBar, PANDA, CLAS Gen 2012-presente
- Membro del Collaboration Board di PANDA come rappresentante del gruppo INFN-TO Set 2008–presente
- Coordinatore delle attività di analisi ed elaborazione dati dell'esperimento FINUDA Gen 2005–2016

- Coordinatore delle analisi dati del gruppo di Torino dell'esperimento OBELIX 1994-2002

***Attività di coordinamento e revisione finanziaria*:**

- *Referee* scientifico e finanziario per un progetto presentato da un gruppo americano allo US Department of Energy Mag 2018
- Responsabile locale del gruppo di Torino per la sigla JLAB12 Lug 2013–presente
- Responsabile locale del gruppo di Torino dell'esperimento FIN 2004–2012
- *Referee* Finanziario nell'ambito di INFN-CSN3 (Fisica Nucleare) degli esperimenti BGO-OD (Bonn, Germany) e CTT/A2 (Mainz, Germany) Lug 2008–presente
- *Referee* finanziario per un progetto presentato alla Czech Scientific Academy 2007
- *Referee* finanziario per un progetto presentato da un gruppo europeo alla Comunità Europea 2001

Incarichi istituzionali e funzioni assunte nell'ambito dell'INFN:

- Componente della commissione esaminatrice biennale per l'assegnazione di assegni di ricerca da conferirsi presso l'INFN di Torino 6/5/2017-5/5/2019
- Membro della commissione esaminatrice per l'assegnazione del premio "C. Villi" alla miglior tesi di dottorato in fisica nucleare discussa nell'anno 2015 Dic 2015
- Membro del "Gruppo di Ascolto" presso la Sezione INFN di Torino Nov 2015
- Membro sostituto della commissione esaminatrice biennale per l'assegnazione di assegni di ricerca da conferirsi presso l'INFN di Torino 5/5/2015-5/5/2017
- Membro della commissione per l'assegnazione di una borsa di studio per neolaureati ad indirizzo informatico, bando 16121/2014 Mag 2014
- Responsabile Unico di Procedura per gli acquisti presso la PA e Punto Istruttore 2010-presente
- Rappresentante del personale ricercatore presso la sezione INFN-Torino Dic 2012-presente
- Membro del Gruppo di lavoro per l'elaborazione della Roadmap CSN3, settori Spettroscopia dei Mesoni Leggeri e Fattori di Forma Nucleonici 2006

Membro di Comitati Organizzatori Locali di Workshop/Conferenze:

- Membro *del Local Organizing Committee di EUNPC, European Nuclear Physics Conference,* Bologna, 2-9/9/2018 Sep 2017-presente
- Membro *del Local Organizing Committee di LDM2015, International Workshop of Light Dark Matter Search at Accelerators,* Camogli (GE), 24-26/6/2015 Mar- Giu 2015
- Segretaria scientifica del corso della Società Italiana di Fisica "Enrico Fermi" *International Physics School "Hadron Physics",* Varenna (LC), 22/6–2/7/2004 2004-Mag 2005
- Membro *del Local Organizing Committee di HYP2000, VII International Conference on Hypernuclear and Strange Particle Physics,* Torino (23-27/10/2000) 2000-Mar 2001
- Segretaria Scientifica del *Workshop WHS99, Workshop on Hadron Spectroscopy,* Frascati 1999

Editore e referee per riviste internazionali:

- Review Editor per il settore Nuclear Physics della rivista *Frontiers in Physics* Feb 2018-presente
- Referee di Physics Letters B 2008-presente
- Referee di Physical Review Letters 2008-presente
- Referee di Nuclear Physics B 2008-presente
- Editore dei *Proceedings* della Scuola *Internazionale di Fisica "E. Fermi", 158th Course*, ed.s T. Bressani, U. Wiedner, A. Filippi, Published in Amsterdam IOS Pr. (2005), 687 pp 2004
- Editore dei *Proceedings* del *Workshop on Hadron Spectroscopy 99,* Frascati Physics Series 15 (1999), 706 pp Mar-Ott 1999

Altri incarichi ed esperienze lavorative correlate:

Principal investigator di proposte di nuovi progetti (presentati ai Comitati dei rispettivi laboratori):

- Co-Principal Investigator del progetto IKON a DAΦNE (LNF) 2009
- Principal Investigator del progetto FLAIR a HESR (GSI) 2003
- Principal Investigator del progetto FINUDA2 a DAΦNE (LNF) 2002

Partecipazione scientifica a progetti di ricerca internazionali ammessi al finanziamento sulla base di bandi che prevedano la revisione tra pari (non principal investigator)

- Sottomessi per la valutazione nell'ambito del programma HORIZON 2020 (STRONG-2020, INFRAIA-01-2018-2019):
  - JRA7-HaSP (Light and Heavy-quark hadron spectroscopy)
  - NA5-THEIA (Strange Hadrons and the Equation-Of-State of Compact Stars)

  Mar 2018
- Accordo di collaborazione Italia-Polonia Light Quark Hadron Spectroscopy (LiQuHaS) 2015-2018
- SPHERE (Strange Particles in Hadronic Environment Research in Europe), Networking activity del VII UE FCP HadronPhysics3 2012-2014
- FairNet (A worldwide research networking activity for experiments in QCD at FAIR), Networking activity del VII UE FCP HadronPhysics3 2012-2014
- HyperGamma, JRA del VI EU FCP HadronPhysics 2005-2007

Partecipazione scientifica a Progetti di Ricerca di Interesse Nazionale (PRIN) (non principal investigator)

- Development of innovative high performance calorimeter and photon veto detectors for the KLEVER project (PRIN tornata 2018 - sottomesso) Mar 2018
- Study of the hadron matter properties through scattering of electromagnetic probes on fixed targets (PRIN tornata 2015 - non approvato) Gen 2016
- Dark matter search in K^+ meson decays (PRIN tornata 2015 – non approvato) Gen 2016

Inviti per collaborazione scientifica presso istituzioni straniere:

- Collaborazione scientifica per l'esperimento HPS, SLAC National Accelerator Laboratory (Menlo Park, USA) 5/6–20/6/2015
- Collaborazione scientifica per l'esperimento BaBar, SLAC National Accelerator Laboratory (Menlo Park, USA) 12/10–12/11/2012
- Collaborazione scientifica per l'esperimento COSY-TOF, FZ Jülich, per 4 periodi ripetuti di 15 gg l'uno 1998-1999
- User presso i seguenti laboratori: JLAB (USA), SLAC (USA), GSI (Germania), Forschungzentrum Jülich (Germania), LNF (Italia), CERN (Svizzera)

Collaborazione alle attività di calcolo della sezione INFN-TO:

- Manager e responsabile delle risorse cloud di sezione assegnate agli esperimenti afferenti alla sigla JLAB12 Dic 2014-presente
- Manager e responsabile della farm di calcolo linux dell'esperimento FINUDA (56 cores, 32 TB disk-server) Gen 2009-presente
- Membro del gruppo di lavoro calcolo e computing presso INFN-Torino 2006

Altri titoli e promozioni, partecipazioni a concorsi:

- Ammessa alla fase di valutazione conclusiva per l'Abilitazione scientifica nazionale alle funzioni di Professore Universitario di Prima Fascia nel settore concorsuale 02/A1 – Fisica sperimentale delle interazioni fondamentali (FIS04) (superamento delle mediane: 3/3) Mag 2018
- Vincitrice del concorso INFN 18011/2016 per il passaggio di livello a I Ricercatore Lug. 2017
- Abilitazione scientifica nazionale alle funzioni di Professore Universitario di Seconda Fascia nel settore concorsuale 02/A1 – Fisica sperimentale delle interazioni fondamentali Gen. 2014

- Vincitrice del concorso INFN 14460/2011 per la riduzione della permanenza nella fascia stipendiale di inquadramento per il passaggio alla fascia successiva Nov. 2012

Publicazioni e lavori a stampa: al 20/07/2018:

- ♦ Articoli sottoposti a referaggio su riviste scientifiche internazionali: 189 (+3 in corso di pubblicazione)
- ♦ Proceedings di conferenze sottoposti a referaggio: 63
- ♦ Proceedings di conferenze: 65
- ♦ Proposal di nuovi progetti e lettere d'intenti: 13
- ♦ Altre pubblicazioni a stampa (arXiv e note interne): 30

Pubblicazioni come singolo autore: 12
Pubblicazioni (sottoposte a referaggio) in collaborazione in cui la candidata compare come primo autore e/o corresponding author: 13
H-index (tutte le pubblicazioni, da ISI-WoS): 31

Partecipazioni a Conferenze: al 20/07/2018 (nel seguito riportata lista dettagliata)

- ♦ Contributi orali a Conferenze e Workshop Internazionali e Nazionali: 32
- ♦ Talk su invito a Conferenze e Workshop Internazionali e Nazionali: 22
- ♦ Seminari: 3
- ♦ Presentazioni di Poster: 4
- ♦ Presentazioni al comitato Scientifico dei Laboratori Nazionali di Frascati: 4

Riconoscimenti:

- ♦ Primo premio per la migliore comunicazione alla LXXXVII Conferenza della Società Italiana di Fisica, Alghero 2002
- ♦ Primo premio per la presentazione di un poster alla conferenza PANIC99, Uppsala, Sweden 1999

Attività di Terza Missione:

- Componente di un gruppo dell'INFN di Torino per un progetto di Alternanza Scuola-Lavoro per una classe di Liceo Socio-Pedagogico (Istituto Regina Margherita di Torino, seminario sulla fisica moderna) a.s. 2018-2019
- Componente del gruppo di Torino dell'iniziativa "Art&Science in Italy", per il coinvolgimento di classi di liceo artistico, classico, scientifico in progetti artistici di ispirazione scientifica nell'ambito del programma di Alternanza Scuola-Lavoro a.s. 2018-2019
- Lezione preparatoria sulla Fisica Sperimentale delle alte Energie al CERN per studenti di scuola media superiore, presso Liceo Scientifico L. Da Vinci, Carate Brianza (MB), 2 ore Feb 2013
- Lezione preparatoria sulla Fisica Sperimentale delle alte Energie al CERN per studenti di scuola media superiore, presso Liceo Scientifico L. Da Vinci, Carate Brianza (MB), 2 ore Nov 2010

Esperienze didattiche e di insegnamento:

Attività seminariale:

- "Practical Recipes for Spin-parity Analysis", Technische Universität Munich, 6 ore Dic 2010
- "Analysis methods in antiproton physics", Italian Physics Society Enrico Fermi International Physics School "Hadron Physics", Varenna, 6 ore Giu 2004
- "Data analysis and kinematic fits" per studenti di dottorato presso l'Università di Torino, corso di Analisi dati e Statistica, 1 ora 1998

Attività didattica:

- Ciclo di lezioni di Relatività speciale ed elettrodinamica relativistica per studenti del corso di Laurea in Fisica, Università di Torino, 6 ore 2003
- Supervisione dell'attività di ricerca di studenti:
  - una studente americano undergraduate (J. Mitchell), dell'Università William And Mary di Williamsburg (Virginia), nell'ambito del programma di scambio INFN-DOE, per attività relative a CLAS (Torino) giu-lug 2018
  - una studentessa post-laurea (I. Balossino), per attività relative ad HPS (Torino e JLAB) 2014
  - due studenti di Laurea Magistrale (M. Zoppi, 2007; C. Kim, 2012), per attività relative a FINUDA (Università di Torino – correlatore di tesi)
  - uno studente tedesco di dottorato (D. Hesselbarth), per attività relative COSY-TOF (University of Bonn e IKP Jülich) 2000

Partecipazione a corsi di formazione e scuole di specializzazione avanzata:

- Corso di formazione su prevenzione e contrasto alla corruzione (e-learning) 28 Mer 2017
- Corso *Third INFN International School on Architectures tools and methodologies for developing efficient large scale scientific computic applications - ESC11*, Bertinoro (FC) – sostenuto relativo esame di verifica con esito positivo 24-29/11/2011
- Corso introduttivo all'uso di *GRID*, Torino Feb 2002
- Corso base e avanzato per l'uso dell'applicazione *Mathematica*, Torino Lug 2002
- Corso avanzato per l'uso dell'applicazione *LabView*, Torino Dic 2001
- Corso per l'uso dell'applicazione *ROOT*, Laboratori Nazionali di Frascati Mag 1997
- Corso *C++ for Particle Physicists*, CERN Mar 1997
- *NATO Advanced Study Intitute "Hadron Spectroscopy and the Confinement Problem"*, London e Swansea (Inghilterra) 27/6-7/7/1995
- *VII Seminario Nazionale di Fisica Nucleare e Subnucleare,* Otranto (LE) Set 1994
- *IX Scuola Invernale di Fisica Adronica,* Folgaria (TN) Feb 1994
- *Scuola di Studi Avanzati in Fisica Nucleare e Subnucleare, V corso* (scuole borsisti INFN, diverse sedi) 1993
- *International School of Subnuclear Physics, 31st course: "From Supersymmetry to the Origin of Space-Time",* Erice (TP) Lug 1993
- *VIII Scuola Invernale di Fisica Adronica*, Folgaria (TN) Feb 1993
- *VII Scuola Invernale di Fisica Adronica*, Folgaria (TN) Feb 1992

Lista delle conferenze Internazionali cui ha partecipato presentando un contributo personale (in ordine cronologico decrescente):

Talk su invito:

1. 14-15/2/2018: *Workshop Pion-Kaon Interactions,* Thomas Jefferson National Accelerator Facility (Newport News, USA)*: "Measurements of hadronic cross-sections with the BaBar detector"*

2. 14-15/2/2018: *Workshop Pion-Kaon Interactions,* Thomas Jefferson National Accelerator Facility (Newport News, USA)*: "Strange Meson Spectroscopy at CLAS and CLAS12"*

3. 7-12/8/2016: *Gordon Research Conference on Photonuclear Reaction: New trends in Probing Quark-Gluon Dynamics* (Holderness, USA): *"Meson spectroscopy in CLAS in conjunction with JPAC"*

4. 1-3/2/2016*:* Workshop *KL2016 - Physics with neutral beams at JLAB,* Thomas Jefferson National Accelerator Facility (Newport News, USA)*: "Low energy kaon scattering: present status and open possibilities"*

5. 19-23/10/2015: Workshop *Frontiers in hadron and nuclear physics with strangeness and charm,* ECT* Trento*: "Strangeonium states: present status, open problems, and future prospects"*

6. 18-20/11/2014: Workshop *Future Directions in Spectroscopy Analysis,* Thomas Jefferson National Accelerator Facility, Newport News (USA), *"Study of $K\bar{K}\pi$ and strangeonia in the (1-3) GeV mass range"*

7. 27-31/10/2014: Workshop *Achievements and Prespectives in Low Energy QCD with Strangeness,* ECT* Trento: *"Λ(1405) in electromagnetic processes with CLAS"*

8. *24-26/9/2014: International Conference on Dark Matter, Hadron Physics and Fusion Physics,* Messina: *"The Meson Spectroscopy Program at Jefferson Laboratory"*

9. 15-18/9/2014*:* Conferenza *EXA14, Exotic Atoms and Related Topics,* Vienna (Austria): *"The FINUDA Experiment: Recent Results"*

10. 21-25/10/2013: Workshop *Strangeness in the Universe? Theoretical and experimental progress and challenges,* ECT* Trento*: "Study of the Σ^-p emission in kaon induced reactions on p-shell nuclei"*

11. 19-21/6/2013: *Workshop on Advanced Studies in Low Energy QCD in the strangeness sector and possible implications in astrophysics,* Laboratori Nazionali di Frascati*: "Recent Results on Kaon Absorption by FINUDA"*

12. 21-25/1/2013: *51st International Winter Meeting On Nuclear Physics*, Bormio (SO): *"Study of Hadronic Υ(nS) decays in strange (multi-baryons)"*

13. 3-8/10/2010: *Workshop on Strangeness in Nuclei,* ECT* Trento*: "Low energy kaon scattering: an experimental overview"*

14. 4-9/7/2010: Conferenza *INPC2010, International Nuclear Physics Conference,* Vancouver (Canada): *"Studies of K^- absorption on light nuclei and the search for Bound Nuclear Kaonic States"*

15. 12-16/10/2009: *Workshop on Hadronic Atoms and Kaonic Nuclei – Solved Puzzles, Open Problems and Future Challenges in Theory and Experiment,* ECT* Trento*: "Summary and perspectives in the study of bound kaonic systems"*

16. 15-17/09/2008, Conferenza *EXA08, Exotic Atoms and Related Topics,* Vienna (Austria): *"Recent results on the search of bound kaonic states in nuclei with FINUDA"*

17. 10-14/10/2006: Conferenza *HYP06, IX International Conference on Hypernuclear and Strange particle Physics,* Mainz (Germania)*: "Studies of K^--nuclear states in FINUDA"*

18. 23-27/08/2004: Conferenza *European Few Body 19*, Groningen (Olanda): *"Recent Experimental Results in Hypernuclear Physics"*

19. 03-07/03/2003: Conferenza *LEAP2003, VII Conference on Low Energy Anti-proton Physics*, Yokohama (Giappone)*: "Open Problems in Antineutron Interactions"*

20. 23-27/10/2000: Conferenza *HYP2000*, *VII International Conference on Hypernuclear and Strange particle Physics*, Torino: *"Hidden strangeness and OZI rule"*

21. 19-23/5/2000: Conferenza *MESON2000, Production, Properties and Interactions of Mesons*, Cracovia (Polonia): *"Violation of OZI rule in ϕ/ω measurements with OBELIX at LEAR"*

Contributi a nome di collaborazione:

1. 26-29/6/2017: *International Workshop on e^+e^- collisions from Phi to Psi 2017 (*Mainz, Germania): *"Dark Photon Studies at BaBar"*

2. 14/7/2016: *AMADEUS Workshop,* Laboratori Nazionali di Frascati: *"The FINUDA Legacy: open problems"*

3. *4-9/10/2015: XLV International Symposium on Multiparticle Dynamics ISMD2015* (Wildbad Kreuth, Germania): *"Measurement of the Collins asymmetries for kaons and pions in e^+e^- annihilation at BABAR"*

4. *8-12/9/2014: SPHERE Workshop,* Praga (Repubblica Ceca): *"Recent results on kaon absorption by FINUDA"*

5. 17-18/12/2013*, KAONNIS Workshop,* Laboratori Nazionali di Frascati: *"Global fit analyses of Λp and Σ^-p final states in K^- induced reactions on p-shell nuclei"*

6. 12-16/9/2013, Conferenza Scalars2013, Varsavia (Polonia*): "Searches for Low Mass Higgs and Dark Bosons at BaBar"*

7. 10-15/10/2011: Conferenza STORI11, Laboratori Nazionali di Frascati: *"Study of pionless two nucleon absorptions at rest by FINUDA"*

8. 5-9/9/2011: Conferenza EXA11, *Exotic Atoms and Related Topics,* Vienna (Austria): "*Recent Results on K- multinucleon absorption by FINUDA"*

9. 29/11-4/12/2009: Conferenza *HADRON09, XIII International Conference on Hadron Spectroscopy,* Tallahasse (USA)*: "Experimental issues on K^- absorption by few nucleons and the search for Bound Kaonic Nuclear States"*

10. 14-18/09/2009: Conferenza HYP-X, *10th International Conference on Hypernuclear and Strange Particle Physics*, Tokai (Giappone): *"Inclusive proton spectra from stopped K- absorption in nuclei with FINUDA"*

11. 14-18/09/2009: Conferenza HYP-X, *10th International Conference on Hypernuclear and Strange Particle Physics*, Tokai (Giappone): *"Study of two-body non mesonic decays of light hypernuclei with FINUDA"*

12. 16-20/03/2009: *Joint Spring Meeting of DPG division Hadronic and Nuclear Physics and the Nuclear Physics Board of the European Physical Society,* Bochum (Germania): *"The search of antikaon-nuclear bound states, recent results from FINUDA"*

13. 30/08-03/09/2007: Conferenza *TROIA07, International Conference on Hadron Physics,* Canakkale (Turchia): *"Experimental results on K^- -nuclear bound states"*

14. 21-26/08/2005: Conferenza *HADRON05, XI International Conference on Hadron Spectroscopy,* Rio de Janeiro (Brasile): *"Study of bound kaonic systems in nuclear matter with FINUDA at DAΦNE"*

15. 16/09/2003: *Workshop on Low Energy Antiprotons at GSI,* GSI Darmstadt (Germania): *"Antinucleon-nucleon annihilation and elastic cross sections: open problems"*

16. 13/09/2003: *Workshop on e^+e^- interaction in the 1-2 GeV Region,* Alghero (SS)*: "Glueballs and Hybrids in the 1-2 GeV region: an experimental overview"*

17. 12/09/2003: *Workshop on e^+e^- interaction in the 1-2 GeV Region,* Alghero (SS)*: "Precision measurements of the Nucleon Form Factors in the time-like region with FINUDA at DAΦNE2"*

18. 18-20/10/2002: Workshop *Euridice,* Laboratori Nazionali di Frascati: *"Measurements of nucleon form factors in the time-like region with DAΦNE at 2 GeV"*

19. 25/8-01/9/2001*:* Conferenza *HADRON2001*, *IX International Conference on Hadron Spectroscopy,* Protvino (Russia): *"Study of isospin two states in $\bar{n}$ p annihilations "*

20. 22-27/1/2001: *XXXIX International Winter Meeting on Nuclear Physics*, Bormio (SO): *"Associated strangeness production at threshold with the TOF Experiment at COSY"*

21. 20-26/8/2000: Conferenza *LEAP2000, VI Biennal Conference on Low Energy Antiproton Physics*, Venezia: *"Hints for a I=2 resonant state in the $\bar{n}$ p$\rightarrow\pi^+\pi^+\pi^-$ annihilation reaction"*

22. 29/5-2/6/2000: Conferenza *BOLOGNA2000, Nuclear Physics at the Dawn of Millennium*, Bologna: *"Study of the $\pi^+\pi^+$ system in the antineutron-proton into three charged pions annihilation reaction"*

23. 8-12/3/1999: *Workshop on Hadron Spectroscopy 99*, Laboratori Nazionali di Frascati: *"Isospin 2 $\pi\pi$ interactions – A Search for I=2 states in $\bar{n}$ p $\rightarrow\pi^+\pi^+\pi^-$ annihilations"*

24. 7-12/9/1998: Conferenza *LEAP98, V Biennal Conference on Low Energy Antiproton Physics*, Villasimius (CA): "*Hidden strangeness production in two body $\bar{n}$ p annihilation in flight"*

25. 25-30/8/1997: Conferenza *HADRON97*, *VII International Conference on Hadron Spectroscopy,* Brookhaven National Laboratories (USA): *"ϕ and ω production in $\bar{n}$ p annihilation in flight"*

26. 26/8-1/9/1996: Conferenza *LEAP96, IV Biennal Conference on Low Energy Antiproton Physics*, Dinkelsbühl (Germania): "*Results on spin-parity analysis on $\bar{n}$ p $\rightarrow\pi^+\pi^+\pi^-$ in flight*"

27. 10-14/7/1995: Conferenza *HADRON95*, *VI International Conference on Hadron Spectroscopy*, Manchester (Inghilterra): "*Study of resonances decaying into four pions in $\bar{N}$ N annihilations*"

28. 12-17/9/1994: Conferenza *LEAP94, III Biennal Conference on Low Energy Antiproton Physics*, Bled (Slovenia): "*Meson Spectroscopy with Antineutrons at OBELIX*"

<u>Partecipazione a Congressi Nazionali:</u>

Talk su invito:

1. 30/9-2/10/1998: *LXXXIV Congresso Nazionale della Società Italiana di Fisica*, Salerno: *"Risultati recenti dell'esperimento OBELIX"*

Presentazioni a nome di collaborazione:

1. 26/9-2/10/2002: *LXXXVIII Congresso Nazionale della Società Italiana di Fisica,* Alghero (SS): "*Ricerca di uno stato stretto a 1.9 GeV nell'annichilazione $\bar{n}$ p $\rightarrow 3\pi^+2\pi^-\pi^0$ in volo"*

2. 26/9-2/10/2002: *LXXXVIII Congresso Nazionale della Società Italiana di Fisica,* Alghero (SS): *"Studio della produzione di risonanze nell'annichilazione $\bar{n}$ p $\rightarrow 3\pi^+2\pi^-$ in volo*"
3. 20-24/9/1999: *LXXXV Congresso Nazionale della Società Italiana di Fisica*, Pavia: *"Produzione associata di stranezza con l'esperimento COSY-TOF"*
4. 2/10-7/10/1993: *LXXIX Congresso della Società Italiana di Fisica,* Udine: *"Evidenza di un nuovo stato stretto a ~1640 MeV nello studio delle annichilazioni $\bar{n}$ p*"

<u>Seminari:</u>

1. 13/4/2014*: A2 Collaboration Meeting,* Mainz (Germania): *"The Meson-EX experiment at JLAB"*

2. 20/6/2002*:* Laboratori Nazionali di Frascati: *"Search for a narrow state at 1.9 GeV in the $\bar{n}$ p $\rightarrow 3\pi^+2\pi^-\pi^0$ annihilation in flight"*

3. 4/5/2000: *DPNC,* Università di Ginevra (Svizzera): *"Experimental results on strangeness production in antinucleon-nucleon annihilation"*

Presentazioni di poster:

1. 2-5/10/2012: Conferenza *Hyp2012, 11th International Conference on Hypernuclear and Strange Particle Physics*, Barcelona (Spagna): *"Study of the $K^-_{stop}A \rightarrow \Sigma^- pA'$ reactions on various p-shell nuclei"*

2. 4-9/7/2010: Conferenza *INPC2010, International Nuclear Physics Conference*, Vancouver (Canada): *"Triggerless Micro Vertex Detector with low material budget in the PANDA detector"*

3. 2-7/10/2001: *Workshop on Electromagnetic Interactions with Nucleons and Nuclei*, Santorini (Grecia): *"OZI rule violation measurements in antinucleon-nucleon annihilation with OBELIX"*

4. 10-16/6/1999: Conferenza *PANIC99, XV Particles and Nuclei International Conference*, Uppsala (Svezia): *"Strangeness production and the OZI rule"*

Torino, 20 luglio 2018

Dr.ssa Alessandra Filippi

Alessandra Filippi

Curriculum – Dr. CALVO Daniela

Present Position
Senior Researcher (Primo ricercatore) at INFN-Torino

Main academic and scientific degrees
1988 Master Degree in Nuclear Engineering at the Politecnico di Torino
1998 Master Degree in Physics at the Università di Torino

Professional qualifications
1988 State Exam for the Qualification of Nuclear Engineer

Member of Committee
1999-2004 as Group Leader in Matter of Safety (GLIMOS) in the committee 'Prevention and risk protection of INFN-LNF
2012-2014 in the committee for the awarding of the prize Anna Piccotti at INFN-Torino
2012-2016 member of the INFN Scientific National Committee 3 (INFN CSN3) for Torino
1012-2016 member of the INFN scientific national Committee 3 (INFN CSN3) for Alessandria

Coordination responsabilities at INFN:
1989-1991 Assembly hall of Technological Laboratory of INFN-Torino

Research activities in the following experiments:
SONGA – Gamma detection for environment application (at INFN-Torino).
I made an important contribute to the calibration of this detector.

OBELIX – Meson spectroscopy, cross sections measurements of antip-p, antin-n, antin-nuclei reactions at LEAR facility (CERN)
Deeply involved in the design and production of the Time of Flight system, and in particular of its calibration system. I worked as a reference person of the trigger system for selection of physics channels under study and then complitely involved in the data taking of the experiment.

TOFUS – Neutrons and ^{4}He detection, with application to the Cold Fusion phenomena (INFN-Torino)
I was fully involved in any aspects of the detector systems development and calibration and analysis of data

JHP-IT – Feasibility study of a antideuteron beam at the JHF facility in Japan (later JPARK)
I collaborated to perform the design and simulation of such line.

FINUDA – Production and mesonic and non-mesonic decay of Λ ipernuclei and states antikaon-few nucleons at DAFNE (LNF)
Co-author to the proposal of this experiment. Deeply involved in the integration of this apparatus, I collaborated to the development of drift chambers filled with gas mixture based on helium and I developed the gas systems of the whole experiment. Fully involved in the data taking of the experiment, as a reference person for drift chambers and safety of the whole apparatus. I was the GLIMOS of this experiment.

ELAPP –Cross section measurement of the antideuteron-proton reactions at AD (CERN)
Co-author to the proposal of this experiment. In the R&D phase, a scintillating fibers prototype was developed

PANDA – Spectroscopy in the charm region, Λ Λ double ipernuclei, iperons production, time-like

form factors (FAIR)
Promoter of the MVD detector as presently designed, in fact I am deeply involved in the design and current responsible. I am the coordinator of the R&D phase for the hybrid pixels, that together with the double sided silicon micro strips, compose the vertex detector, which is fundamental for tracking and specially able to detect secondary vertices of short-live particles.

JLAB12-HPS – Heavy photons research at JLAB
I collaborated to the calibration system design of the calorimeter.

NUMEN_GR3 – Evaluation of the nuclear matrix elements of the double charge exchange reactions with ions to extract information on the lifetime of the double beta decay neutrino-less reaction (LNS)
At present I am involved in the R&D phase for the upgrade of the MAGNEX apparatus to the new ion beam intensities foreseen at LNS with the new superconducting cyclotron. I am studying the new scattering chamber and I am working on the target development. My task is also to study the apparatus integration. Meanwhile I collaborate to the pioneering runs with the present MAGNEX and cyclotron.

Research activities in the following projects:
HYPERGAMMA – Study of HPGe for their applications inside magnetic fields
I contributed to the study of a Germanium detector inside a magnetic field workinfg for some tests.

Helmholtz Virtual Institute 'SPIN and STRONG QCD'- *Cooperation for QCD: polarization, symmetry, hadronic spectroscopy*
I proposed a solution for a micro vertex detector as fundamental system for vertices reconstruction

ULISI – Ultra thin silicon trackers and vertex detectors for experiments developed for precise measurements
For this project, I proposed the epitaxial silicon material for thinned pixel devices in a hard radiation environment. Design and tests of prototypes.

ULISINT – Large silicon detector systems in the hadron physics field for high precision vertex reconstruction and tracking.
In this project, I proposed and developed thinner cable for data transmission for experiments dedicated to the hadron physics.

Activities in the following european networks:
SPHERE – Networking for the hypernuclear physics
FAIRnet – Networking of experiments dedicated to the QCD at FAIR

Main responsibilities in national and international experiments of INFN and other projects:
- Calibration System for the time of flight detector, OBELIX(1989 -1997)
- Coordination for the installation of the anti-neutrons line, OBELIX (1989-1997);
- Neutron Detector, TOFUS (1989 al 1997), and ^{4}He analysis system
- Characterization of the drift chamber prototype, FINUDA (1993 al 1995)
- Helium Chamber, FINUDA (1995-2009)
- Gas systems for He Chamber and Drift Chambers, FINUDA (1995-2009)
- Safety System for the hydrocarbon leakages, FINUDA, (1996-2009)
- GLIMOS of the FINUDA experiment, (1996- 2004)
- Coordination of the inner detectors installation in FINUDA(1998-1999)
- Responsible of the Torino Group involved in PANDA, at INFN(2005-2016)
- Pixel Detector in the PANDA experiment(from 2005 until now)
- Contact Person for INFN-Torino in FAIRnet (FP7-HadronPhysics 2-WP7) (2009-2011)

- Activity Leader for INFN-Torino in FAIRnet (FP7-HadronPhysics 3-WP7) (2012-2014)
- Deputy chair of the Speaker Committee, PANDA (2010)
- Chair of the Speaker Committee, PANDA (2011)
- Micro Vertex Detector in the PANDA experiment (from 2012 until now)
- Member of Technical Board, PANDA (from 2005 until now)
- Member of the Technical Assessment Group for the Front End Electronics, PANDA (2007- 2008)
- Member of the Collaboration Board in PANDA for INFN-Torino (from 2005 until now)
- Member of the Common task drafting Committee, PANDA (2015-2016)
- Responsible for the Torino Group involved in NUMEN_Gr3, at INFN (from 2016 until now)
- Apparatus Integration in the R&D phase, NUMEN_Gr3 (from 2016 til now)
- Member of the Pubblication Board, NUMEN_Gr3 (from 2016 until now)
- Member of the Technical Board,NUMEN_Gr3 (from 2016 until now)
- Chair of the Membership Committee, PANDA (from 2016 until now)

Member of the organizing committee of Workshop and Conference:

2000 VII International Conference on Hypernuclear and Strage particle Physics (HYP2000), October 2000, Torino,
2013 International Workshop on Real time, self triggered front end electronics for multichannel detectors, November 2013, Torino,
2017 International Conference, CNNP2017, October 2017, Catania,
2018 International Conference, EUNPC2018, September 2018, Bologna

As advisory member of Workshop and Conference:

2011 National workshops of INFN-Universita',
'Management systems – Auditors for securities: a new profession',
October 2011, LNGS, in the Technical-Scientific Committee
2015 International Conference, Nucleus-Nucleus 2015,
June 2015, Catania, in the Program Committee
2015 IFD2015-Workshop on Future Detectors,
December 2015, Torino, in the Scientific Committee
2018 International Conference, EUNPC2018,
September 2018, Bologna, Convener of the Instrumentation Field.

Reviewer

Since 2012 until September 2018, referee of ALICE experiment at LHC (CERN), inside the INFN CSN3
Since 2012 until now, referee of PRISMA-FIDES experiment at INFN-LNL, , inside the INFN CSN3
2017 Internal reviewer of the Luminosity monitor TDR in PANDA experiment.

Didactic activities:

Tutor of 1 Post Doc Fellowship for INFN
Tutor of a Post Doc Fellowship Marie Curie in Torino.
Senior Mentor of 1 Phd for the Helmholtz Graduate School for Hadron and Ion Research
Tutor for INFN of stages of two students of the University of Torino.
Co-supervisor of 7 Master thesis in Physics of the University of Torino
Supervisor of 2 Thesis (1^ level) in Physics of the University of Torino

3 invited lectures (experimental activities) (1992, 2003, 2009)
2 Seminars on safety use of the detectors based on gas, for Particle physics (2001,2003)
3 Seminars on safety in the construction of experiments (2003, 2004)
In two educational committee (2004, 2005) of INFN for the organization of the emergency teams

Member of the organizing committee '12th HANUC Lecture Week on Hadron Physics, The Nucleon Structure', March 2009, Torino. Inside the 'European Graduate School ‘Complex Systems of Hadrons and Nuclei’

Coordinator of the 'Conference days on safety in INFN experimental and technological equipment', training days dedicated to safety in INFN experimental and technological systems for researchers, technologists, experiments responsibles and GLIMOS, October 2004, LNF

Director of the training course for researchers and engineers ' Conversione optoelettronica nella trasmissione dei dati dai rivelatori' based on six modules, 18-19-20 June 2018.

My personal contribution to the research activities aforementioned and the developments inside the experiments are documented by:
187 articles (ISI or SCOPUS)
117 conference proceedings
33 communications to national conferences
40 other papers: Letter of Intent, Proposal, Technical Reports, Annual Reports, Miscellanea
Co-editor of the Technical Design Report for the PANDA Micro Vertex Detector

Curriculum Vitae

NICOLAO FORNENGO

Full Professor
Department of Physics, University of Torino
and Istituto Nazionale di Fisica Nucleare - Torino
via P. Giuria 1, I-10125 Torino, Italy

Open Researcher and Contributor ID (ORCID): 0000-0002-3074-3118

PERSONAL DATA

Name: Nicolao
Surname: Fornengo

STUDIES

Degree in Physics: University of Torino, 1990, 110/110 *magna cum laude*
Specialization: School of Specialization in Nuclear and Subnuclear Physics and Astrophysics, University of Torino, 1991
PhD in Physics: VII Cicle, University of Torino, 1992 – 1994
Topic of research: Supersymmetric particles as cold dark matter candidates
Title of the thesis: Dark matter: neutralino relic abundance and its detection signals

RESEARCH FELLOWSHIPS

Fellowship: INFN Fellowship in "Theoretical Nuclear and Subnuclear Physics", 1991
Post–Doc: The Johns Hopkins University (Baltimore, USA), 1995 – 1996
Research activity: Neutrino physics, weak processes, particle cosmology, supersymmetric dark matter in supergravity teories
Post–Doc: University of Torino (Italy), 1997 – 1998
Research activity: Supersymmetric dark matter in extended supersymmetric theories, particle cosmology, neutrino physics
Post–Doc: University of Valencia/IFIC (Spain), 1999
Research activity: Neutrino physics, physics beyond the standard model, particle cosmology

ACADEMIC POSITIONS

Assistant Professor: Department of Theoretical Physics, University of Torino
1 November 1999 – 30 November 2006
Associate Professor: Department of Physics, University of Torino
1 December 2006 – 21 December 2017
Full Professor: Department of Physics, University of Torino
22 December 2017 (current position)

VISITING SCIENTIST

- Korea Institute for Advanced Study (KIAS), Seoul, South Korea, June 1997
- IFIC/Universidad de Valencia, Spain, November 1999 – February 2000
- Laboratoire de Physique Theorique (LAPTH), Annecy, France, June – September 2000
- Korea Institute for Advanced Study (KIAS), Seoul, South Korea, September 2002
- Galileo Galilei Institute for Theoretical Physics (GGI), program on *Astroparticle and Cosmology*, Arcetri, Italy, September 2006
- Institute de Physique Théorique – CEA-Saclay and IAP, Paris, France, June 2009
- Galileo Galilei Institute for Theoretical Physics (GGI), program on *Dark Matter: Its Origin, Nature and Prospects for Detection*, Arcetri, Italy, May 2010
- CERN, program on *Dark Matter Underground and in the Heavens – DMUH11*, Geneva, Switzerland, July 2011
- CETUP*, program on *Center for Theoretical Underground Physics and Related Areas*, Deadwood/Lead, South Dakota, USA, July 2012
- CETUP*, program on *Center for Theoretical Underground Physics and Related Areas*, Deadwood/Lead, South Dakota, USA, July 2013
- IFT-UAM/CSIC, program on *Identification of Dark Matter with a Cross-Disciplinary Approach*, Madrid, Spain, May 2015
- Galileo Galilei Institute for Theoretical Physics (GGI), program on *Theoretical Cosmology in the Era of Large Surveys*, Arcetri, Italy, April 2016
- Laboratoire de Physique Théorique et Hautes Energies Physics (LPTHE) and Univesité Pierre et Marie Curie, Paris, France, May 2016

MANAGEMENT OF RESEARCH GROUPS, GRANTS

- 2017–2020: **Principal Investigator** of the project *The Anisotropic Universe* cofunded by Compagnia di Sanpaolo and University of Torino [Budget: 89.100 euros; duration: 3 years; size of the leaded group: 9 members]
- 2014–2017: **Principal Investigator** of the national project *Theoretical Astroparticle Physics* funded by the Italian Ministry of Research and Education (PRIN 2012) [Budget: 609.716 euros; duration: 3 years; size of the leaded group: 8 research units, 37 staff members, about 40 postdocs and PhD students]
- 2009–2012: **Local coordinator** of the national project *Signals of dark matter in space, in underground laboratories and at the LHC, cosmological structures in alternative theories of gravity, neutrino physics and its impact on cosmology*, funded by the Italian Ministry of Research and Education (PRIN 2008) [Budget: 94.110 euros; duration: 2 years; size of the leaded group: 5 staff members, 5 postdocs and PhD students]
- 2009-2010: **Principal Investigator** of the national project *Dark matter signals from space: antimatter and gamma–rays*, funded by the Italian Space Agency [Budget: 55.000 euros; duration: 1 years; size of the leaded group: 4 research units, 8 staff members, 12 postdocs and PhD students]
- 2008–2010: **Principal Investigator** of the project *Theoretical astroparticle physics* funded by the University of Torino and Regione Piemonte for hiring young outstanding researchers (action on brain drain restraint) [Budget: 96.000 euros; duration: 2 years]
- 2010–2017: **Co-Coordinator** of the scientific activities on "Dark matter indirect searches" for the spanish national project *MultiDark Consolider*
- 2006–2008: **Local coordinator** of the national project *Fundamental Constituents of the Universe: Dark Matter and Dark Energy, Cosmology and Neutrinos*, funded by the Italian Ministry of Research and Education (PRIN 2006) [Budget: 97.500 euros; duration: 2 years; size of the leaded group: 4 staff members, 10 postdocs and PhD students]
- 2008–2009: **Principal Investigator** of the national project *Dark matter signals from space: antimatter and gamma–rays* funded by the Italian Space Agency [Budget: 23.000 euros; duration: 1 years; size of the leaded group: 4 research units, 8 staff members, 12 postdocs and PhD students]
- 2004–2006: **Local coordinator** of the national project *Astroparticle Physics and Neutrino Physics* funded by the Italian Ministry of Research and Education (PRIN 2004) [Budget: 67.200 euros; duration: 2 years; size of the leaded group: 4 staff members, 4 postdocs and PhD students]
- 2005–2008: **Principal Investigator** of the project *Astroparticle Physics* funded by the University of Torino [Budget: 44.000 euros]
- 2005–2009: **Member** of the european project ENTApP ILIAS "Deep Underground Labs, Dark Matter, Double Beta Decay and Gravitational Waves", VI Framework Program – Research Infrastructures
- 2004–2012: **Coordinator** of the "Astroparticle and Neutrino Physics Group" at the Department of Theoretical Physics, University of Torino (from 2004 to 2012)
- 2000–2012: **Coordinator** of the "Astroparticle and Neutrino Physics Project", jointly financed by the italian INFN and the spanish MEC, for collaborations with IFIC/Valencia (from 2000 to 2012) and with Universidad Autonoma de Madrid (from 2000 to 2012)

APPOINTMENTS, SCIENTIFIC ASSOCIATIONS, MEMBERSHIPS

Current

- since 2011: **Chair of the Steering Committee** of the International Conference on *Topics in Astroparticle and Underground Physics* (**TAUP**) (IUPAP sponsored Conference)
- since 2016: **Co-Chair of the Scientific Committee** of the *International School on AstroParticle Physics – European Doctorate School* (**ISAPP**) [with K. Eitel, Karlsruhe Institute of Technology]
- since 2017: **Member of the Scientific Committee** of the Laboratori Nazionali del Gran Sasso (appointed by INFN)
- since 2017: **Member of the Board** for the *Studies for the Scientific Community in High Energy Astrophysics and Astroparticle Physics* of the Italian Space Agency (ASI) and the National Institute of Astrophysics (INAF), agreement ASI-INAF n.2017-14-H.0 (appointed by the Italian Space Agency)
- since 2016: **Member of the Observatory of Research** ("Osservatorio per la Ricerca"), one the Governance Bodies of the University of Torino
- since 2005: **Member of the Faculty Board** ("Consiglio dei Docenti") of the Doctoral School in Physics of the University of Torino
- since 2005: **Member of the Research Board** ("Commissione Ricerca") of the Department of Physics of the University of Torino
- since 2006: **Associate Member** of the Committee on Space Research (COSPAR)
- since 1994: **Member** of the Italian Physical Society (SIF)
- since 1991: **Research Associate** of the Istituto Nazionale di Fisica Nucleare

Past

- 2010–2016: **Member of the Scientific Committee** of the *International School on AstroParticle Physics – European Doctorate School (ISAPP)*
- 2014–2015: **Convener** for the Working Group on "Dark Matter" under the INFN "What Next" Program, for the identification of the future scientific priorities of INFN
- 2007–2011: **Member of the Steering Committee** of the International Conference on *Topics in Astroparticle and Underground Physics (TAUP)* (IUPAP sponsored Conference)
- 2008–2014: **Member of the Scientific Committee** of the *International Doctorate on AstroParticle Physics (IDAPP)*
- 2012: **Member of the Selection Committee** of the *INFN Fubini Prize* for the best doctoral thesis in theoretical physics
- 2012: **Member of the Research Assessment Committee**, for the University of Torino and for the Istituto Nazionale di Fisica Nucleare (INFN), under the "VQR 2004-2010 – Assessment of the Quality of Research", for the"National Agency for the Assessment of the University and Research System" (Agenzia Nazionale di Valutazione del Sistema Universitario e della Ricerca – ANVUR)
- 2008–2012: **Member of the Faculty Board** ("Consiglio dei Docenti") of the Doctoral School in Science and Technology of the Faculty of Science of the University of Torino

- 2007–2012: **Member of the Administrative Board** ("Consiglio di Gestione") of the Faculty of Science of the University of Torino
- 2001–2012: **Member of the Board ("Giunta")** of the Theoretical Physics Department, University of Torino
- 2003–2005: **Member of the Review Committee** ("Commissione del Riesame") for the Degree in Physics, University of Torino
- 2002–2005: **Coordinator of the Tutoring Program** for the Bachelor's Degree in Physics, University of Torino
- 2002–2005: **Member of the Tutoring Board** ("Commissione Tutoraggio") of the Faculty of Science of the University of Torino
- 2002–2003: Elected **Researchers' Representative** for the Torino Section of INFN

MEMBER OF EVALUATION COMMITTEES

- 2017: **Referee for the Polish Government Agency of the National Science Centre** (Narodowe Centrum Nauki - NCN) call for proposals [**1 project**]
- 2017: **Referee of Belgian National Projects** for the *Research Foundation Flanders* (Fonds Wetenschappelijk Onderzoek – Vlaanderen: FWO), Belgium [**1 project**]
- 2016: **Referee of Belgian National Projects** for the *Research Foundation Flanders* (Fonds Wetenschappelijk Onderzoek – Vlaanderen: FWO), Belgium [**2 projects**]
- 2016: **Referee for the Polish Ministry of Science and Higher Education (MNiSW)** call for proposals, in the field of *Physical Sciences and Engeneering - Fundamental Constituents of matter* [**1 project**]
- 2016: **Referee for the Georgia National Science Foundation** call for proposals, in the field of *Theoretical Physics*
- 2016: **Member of the Panel of Experts** in Astroparticle Physics for the *Indian Institute of Technology*, Gandhinagar, India
- 2016: **Referee of the Italian National VQR 2011-2014 – Assessment of the Quality of Research**, for the *National Agency for the Assessment of the University and Research System* (Agenzia Nazionale di Valutazione del Sistema Universitario e della Ricerca – ANVUR), Italy
- 2015: **Expert Committee Member** for the evaluation of the *Laboratoire d'Annecy-le-Vieux de Physique Théorique (LAPTh)*, appointed by the French "Agence dévaluation de la recherche et de l'enseignement supérieur (AERES)" for the Campagne d'évaluation des unité de recherche 2014-2015
- 2015: **Referee for the Polish Ministry of Science and Higher Education (MNiSW)** call for proposals, in the field of *Physical Sciences and Engeneering - Fundamental Constituents of matter* [**1 project**]
- 2015: **Referee for the Georgia National Science Foundation** call for proposals, in the field of *Theoretical Physics*

- 2015: **Referee for the Selection of Candidates** for the Italian project *Rita Levi Montalcini Program for Young Researchers* (Programma per Giovani Ricercatori "Rita Levi Montalcini"), Italy [**2 projects**]
- 2015: **Referee for the Selection of Candidates** for the University of Torino ERC Program *Train2Move - Horizon 2020 Marie Curie Actions* [**2 projects**]
- **Referee for the Selection of Candidates** for the italian project *Rita Levi Montalcini Program for Young Researchers* (Programma per Giovani Ricercatori "Rita Levi Montalcini"), Italy [**2 projects**]
- 2015: **Referee for the Georgia National Science Foundation** call for proposals, in the field of *Theoretical Physics*
- 2014: **Referee for the ERC Consolidator Grant - 2014** call for proposals, in the field of *Fundamental Constituents of Matter*
- 2014: **Referee for the selection of candidates** for the Italian project *Future in Research 2014* (FIR 2014), for the University of Catania internal call, Italy
- 2013: **Referee for the Selection of Candidates** for the Italian project *Rita Levi Montalcini Program for Young Researchers* (Programma per Giovani Ricercatori "Rita Levi Montalcini"), Italy [3 projects]
- 2013: **Referee for the selection of candidates** for the Italian project *Future in Research 2013* (Futuro in Ricerca 2013 – FIRB), Italy
- 2012: **Referee of French National Projects** for the *National Research Agency* (Agence Nationale de la Recherche: ANR), France
- 2012: **Referee of Dutch National Projects** for the *Foundation for Fundamental Research on Matter* (Stichting voor Fundamenteel Onderzoek der Materie: FOM), The Netherlands
- 2012: **Referee of Belgian National Projects** for the *Research Foundation Flanders* (Fonds Wetenschappelijk Onderzoek – Vlaanderen: FWO), Belgium
- 2012: **Rapporteur for the French Habilitation to Direct Research** (Habilitation à Diriger des Recherches: HDR), Université de Savoie, France
- 2012: **Referee of the Italian National VQR 2004-2010 – Assessment of the Quality of Research**, for the *National Agency for the Assessment of the University and Research System* (Agenzia Nazionale di Valutazione del Sistema Universitario e della Ricerca – ANVUR), Italy

CONFERENCES ORGANIZATION

Chairman

- Chair of the Organizing Committee of the *XIV International Conference on Topics in Astroparticle and Underground Physics (TAUP 2015)*, Torino (Italy), September 7–11, 2015
- Chair of the Organizing Committee of the International Doctoral School *ISAPP 2014: Multi-wavelength and multi-messenger investigation of the visible and dark Universe*, Belgirate (Italy), July 21–30, 2014
- Chair of the Organizing Comittee of the *IV International Workshop on the Interconnection between Particle Physics and Cosmology (PPC 2010)*, Torino (Italy), July 12–16, 2010

Member of Committees

- Member of the Organising Committee of the *XXXVI Convegno Nazionale di Fisica Teorica "New Frontiers in Theoretical Physics"*, Cortona (Italy), to be held on May 23-26, 2018
- Member of the Organising Committee of the *Barolo Astroparticle Meeting (BAM 2017)*, Barolo (Italy), September 4–6, 2017
- Member of the International Advisory Committee of the *XVIII Lomonosov Conference on Elementary Particle Physics*, Moscow (Russia), August 24–30, 2017
- Member of the Advisory Committee of the International Doctoral School *ISAPP 2017: The Dark and the Visible Side of the Universe*, Texel (The Netherland), June 26 – July 5, 2017
- Member of the Advisory Committee of the International Doctoral School *ISAPP 2016: Physics and Astrophysics of Cosmic Rays in Space*, Milano (Italy), September 12 – 20, 2016
- Member of the International Advisory Committee of the *XVII Lomonosov Conference on Elementary Particle Physics*, Moscow (Russia), to be held on August 20–26, 2015
- Member of the International Advisory Committee of the Workshop *Light dark matter searches at accelerators (LDMA 2015)*, Camogli (Italy), June 24-26, 2015
- Co-organizer of the *What Next LNGS: Prospettive per il ruolo scientifico dei LNGS* (October 15-16, 2014), Laboratori Nazionali del Gran Sasso, for the activities of the INFN What Next Program
- Co-organizer of the *What Next DM GdL Meeting 1: Direct Detection* (March 18, 2014), *What Next DM GdL Meeting 2: Indirect Detection* (March 20, 2014), *What Next DM GdL Meeting 3: Accelerator Searches* (March 21, 2014), *What Next DM GdL Meeting 4* (July 10, 2014), web meetings for the activities of the INFN What Next Program
- Member of the Organizing Committee of the *XIII International Conference on Topics in Astroparticle and Underground Physics (TAUP 2013)*, Asilomar (CA, USA), September 9–13, 2013
- Member of the International Advisory Committee of the *XVI Lomonosov Conference on Elementary Particle Physics*, Moscow (Russia), August 22–27, 2013
- Member of the Advisory Committee of the International Doctoral School *ISAPP 2013: Dark Matter Composition and Detection*, Djurönäset (Sweden), July 29 – August 6, 2013
- Member of the International Advisory Committee of the *VI International Workshop on the Interconnection between Particle Physics and Cosmology (PPC 2012)*, KIAS, Seoul (South Korea), November 5–9, 2012
- Member of the International Advisory Committee of the *IPM International School and Workshop on Particle Physics (IPP12): Neutrino Physics and Astrophysics*, IPM, Teheran (Iran), September 26 – October 1, 2012
- Chair of the Astroparticle and Cosmology Session at the *National Congress of the Italian Physical Society (SIF)*, Napoli (Italy), September 17–21, 2012
- Member of the Advisory Committee of the International Doctoral School *ISAPP 2012: Cosmic Microwave Background and High Energy Physics*, La Palma (Spain), July 16 – 24, 2012
- Member of the Organizing Comittee of the *XII International Conference on Topics in Astroparticle and Underground Physics (TAUP 2011)*, Munich (Germany), September 5–9, 2011

- Member of the International Advisory Committee of the *XV Lomonosov Conference on Elementary Particle Physics*, Moscow (Russia), August 18–24, 2011
- Member of the International Advisory Committee of the *V International Workshop on the Interconnection between Particle Physics and Cosmology (PPC 2011)*, CERN, June 14–18, 2011
- Member of the Organizing Comittee of the *National Workshop on Astroparticle Physics (INIFA 2010)*, Laboratori Nazionali di Frascati (Frascati, Italy), June 22–23, 2010
- Member of the Organizing Comittee of the *XI International Conference on Topics in Astroparticle and Underground Physics (TAUP 2009)*, Roma (Italy), July 1–5, 2009
- Member of the Organizing Comittee of the *X Summer Institute at Gran Sasso: Particle Physics and Astrophysics beyond the TeV Scale*, Laboratori Nazionali del Gran Sasso (L'aquila, Italy), August 29 - September 16, 2005
- Member of the Organizing Comittee of the *International School on Astroparticle Physics (ISAPP 2005)* on *High energy cosmic rays*, Belgirate (Italy), July 1–9, 2005

EDITOR AND REFEREE

Referee for:

- *Physical Review Letters*
- *Physical Review D*
- *Journal of High Energy Physics (JHEP)*
- *Journal of Cosmology and Astroparticle Physics (JCAP)*
- *Astroparticle Physics*
- *Classical and Quantum Gravity*
- *Advances in Space Research*

Associate Editor of *Frontiers in High-Energy and Astroparticle Physics* (open access journal associated to the Nature Publishing Group)

AWARDS

- Award from the American Physical Society: *Outstanding Referees of the Physical Review and Physical Review Letters journals*

SUMMARY OF SCIENTIFIC OUTPUT [as of October 2017, from inSPIRES]

Papers: 97
Proceedings: 80
Publications on books: 4 (Cambridge University Press, IOP)
Total number of citations: 7321
Average citations per paper: 76
Papers with more than 100 citations: 24

h-index: 43 (Scopus and ISI Web of Science), 46 (NASA ADS), 52 (inSPIRES), 54 (Google Scholar)

Talks at international conferences: 109 (77 as invited speaker)
Seminars and Lectures: 57
Public engagement activities: 50 (includes articles, public presentations, interviews)

The full list of references with links to papers, updated live, can be found here:
http://inspirehep.net/search?ln=it&p=au%3Afornengo&of=hb&action_search=Cerca&sf=earliestdate&so=d

Open access and updated live metrics can be found here:
inSPIRES (CERN, DESY, Fermilab and SLAC)
NASA ADS
Google Scholar

LIST OF PUBLICATIONS

1. A. Bottino, V.de Alfaro, N. Fornengo, G. Mignola, M. Pignone
   Indirect search for neutralinos at neutrino telescopes
   Physics Letters **B265** (1991) 57–63

2. A. Bottino, V.de Alfaro, N. Fornengo, A. Morales, J. Puimedon, S. Scopel
   Direct versus indirect searches for neutralino dark matter
   Modern Physics Letters **A7** (1992) 733–748

3. A. Bottino, V.de Alfaro, N. Fornengo, G. Mignola, S. Scopel
   A new investigation about neutralino dark matter: relic density and detection rates
   Astroparticle Physics **1** (1992) 61–76

4. A. Bottino, V.de Alfaro, N. Fornengo, G. Mignola, S. Scopel, C. Bacci et al.
   Search for neutralino dark matter with NaI detectors
   Physics Letters **B295** (1992) 330–336

5. A. Bottino, V.de Alfaro, N. Fornengo, G. Mignola, M. Pignone
   On the neutralino as dark matter candidate – I. relic abundance
   Astroparticle Physics **2** (1994) 67–76
   [arXiv:hep–ph/9309218]

6. A. Bottino, V.de Alfaro, N. Fornengo, G. Mignola, S. Scopel
   On the neutralino as dark matter candidate – II. direct detection
   Astroparticle Physics **2** (1994) 77–90
   [arXiv:hep–ph/9309219]

7. A. Bottino, N. Fornengo, G. Mignola, L. Moscoso
   Signals of neutralino dark matter from Earth and Sun
   Astroparticle Physics **3** (1995) 65–76
   [arXiv:hep–ph/9408391]

8. A. Bottino, C. Favero, N. Fornengo, G. Mignola
   Amount of antiprotons in cosmic rays due to halo neutralino annihilation
   Astroparticle Physics **3** (1995) 77–86
   [arXiv:hep–ph/9408392]

9. A. Bottino, N. Fornengo, C.W. Kim, G. Mignola
   Limits on the neutrino mass and mixing angle from pion and lepton decays
   Physical Review D **53** (1996) 6361–6373
   [arXiv:hep–ph/9505394]

10. V. Beresinzky, A. Bottino, J. Ellis, N. Fornengo, G. Mignola, S. Scopel
    Neutralino dark matter in supersymmetric models with non–universal scalar mass terms
    Astroparticle Physics **5** (1996) 1–26
    [arXiv:hep–ph/9508249]

11. V. Beresinzky, A. Bottino, J. Ellis, N. Fornengo, G. Mignola, S. Scopel
    Searching for relic neutralinos using neutrino telescopes
    Astroparticle Physics **5** (1996) 333–352
    [arXiv:hep–ph/9603342]

12. A. Bottino, N. Fornengo, G. Mignola, M. Olechowski, S. Scopel
Perspectives for detection of a higgsino–like relic neutralino
Astroparticle Physics **6** (1997) 395–410
[arXiv:astro–ph/9611030]

13. N. Fornengo, C. Giunti, C.W. Kim, J. Song
Gravitational effects on the neutrino oscillation
Physical Review D **56** (1997) 1895–1902
[arXiv:hep–ph/9611231]

14. N. Fornengo, C.W. Kim, J. Song
Finite temperature effects on neutrino decoupling in the early Universe
Physical Review D **56** (1997) 5123–5134
[arXiv:hep–ph/9702324]

15. A. Bottino, F. Donato, N. Fornengo, S. Scopel
Pinning down neutralino properties from a possible modulation signal in WIMP direct search
Physics Letters **B423** (1998) 109–117
[arXiv:hep–ph/9709292]

— A. Bottino, F. Donato, N. Fornengo, S. Scopel
Extending a previous analysis on a possible modulation effect in WIMP direct search
preprint DFTT 61/97, October 1997 (DFTT internal report)
[arXiv:hep-ph/9710295]

16. F. Donato, N. Fornengo, S. Scopel
Effects of galactic dark halo rotation on WIMP direct detection
Astroparticle Physics **9** (1998) 247–260
[arXiv:hep–ph/9803295]

17. A. Bottino, F. Donato, N. Fornengo, P. Salati
Which fraction of the measured cosmic–ray antiprotons might be due to neutralino annihilation in the galactic halo?
Physical Review D **58** (1998) 123503
[arXiv:astro–ph/9804137]

18. A. Bottino, F. Donato, N. Fornengo, S. Scopel
Neutralino properties in the light of a further indication of an annual modulation effect in WIMP direct search
Physical Review D **59** (1999) 095003
[arXiv:hep–ph/9808456]

19. A. Bottino, F. Donato, N. Fornengo, S. Scopel
compatibility of the new DAMA/NaI data on an annual modulation effect in WIMP direct search with a relic neutralino in supergravity schemes
Physical Review D **59** (1999) 095004
[arXiv:hep–ph/9808459]

20. A. Bottino, F. Donato, N. Fornengo, S. Scopel
combining the data of annual modulation effect in WIMP direct detection with measurement of WIMP indirect searches
Astroparticle Physics **10** (1999) 203–210
[arXiv:hep–ph/9809239]

21. F. Donato, N. Fornengo, P. Salati
Antideuterons as a signature of supersymmetric dark matter
Physical Review D **62** (2000) 043003
[hp–ph/9904481]

22. P. Belli, R. Bernabei, A. Bottino, F. Donato, N. Fornengo, D. Prosperi, S. Scopel
Extending the DAMA annual modulation region by inclusion of the uncertainties in the astrophysical velocities
Physical Review D **61** (2000) 023512
[arXiv:hep–ph/9903501]

23. N. Fornengo, M.C. Gonzalez–Garcia, J.W.F. Valle
On the interpretation of the atmospheric neutrino data in terms of flavour changing neutrino interactions
Journal of High Energy Physics (JHEP) 0007 (2000) 006
[arXiv:hep–ph/9906539]

24. A. Bottino, F. Donato, N. Fornengo, S. Scopel
Implications for relic neutralinos of the theoretical uncertainties in the neutralino–nucleon cross section
Astroparticle Physics **13** (2000) 215–225
[arXiv:hep–ph/9909228]

25. A. Bottino, F. Donato, N. Fornengo, S. Scopel
Further investigation of a relic neutralino as a possible origin of an annual-modulation effect in WIMP direct search
Physical Review D **62** (2000) 056006
[arXiv:hep–ph/0001309]

26. N. Fornengo, M.C. Gonzalez–Garcia, J.W.F. Valle
Updated global analysis of the atmospheric neutrino data in terms of neutrino oscillations
Nuclear Physics **B 580** (2000) 58–82
[arXiv:hep–ph/0002147]

27. A. Bottino, F. Donato, N. Fornengo, S. Scopel
Probing the supersymmetric parameter space by WIMP direct detection
Physical Review D **63** (2001) 125003
[arXiv:hep–ph/0010203]

28. A. Bottino, N. Fornengo, S. Scopel
Implications of a possible 115 GeV supersymmetric higgs boson on detection and cosmological abundance of relic neutralinos
Nuclear Physics **B 606** (2001) 461–474
[arXiv:hep–ph/0012377]

29. N. Fornengo, M. Maltoni, R. Tomas Bayo, J.W.F. Valle
Probing neutrino non–standard interactions with atmospheric neutrino data
Physical Review D **65** (2002) 013010
[arXiv:hep–ph/0108043]

30. A. Bottino, F. Donato, N. Fornengo, S. Scopel
Size of the neutralino–nucleon cross-section in the light of a new determination of the pion-nucleon sigma term
Astroparticle Physics **18** (2002) 205–211
[arXiv:hep–ph/0111229]

31. P. Belli, R. Cerulli, N. Fornengo, S. Scopel
Effect of the galactic halo modeling on the DAMA/NaI annual modulation result: an extended analysis of the data for WIMPs with a purely spin–independent coupling
Physical Review D **66** (2002) 043503
[arXiv:hep–ph/0203242]

32. A. Bottino, G. Fiorentini, N. Fornengo, B. Ricci, S. Scopel, F.L. Villante
Does solar physics provide constraints to weakly interacting massive particles?
Physical Review D **66** (2002) 053005
[arXiv:hep–ph/0206211]

33. N. Fornengo, A. Riotto, S. Scopel
Supersymmetric dark matter and the reheating temperature of the Universe
Physical Review D **67** (2003) 023514
[arXiv:hep–ph/0208072]

34. A. Bottino, N. Fornengo, S. Scopel
Light relic neutralinos
Physical Review D **67** (2003) 063519
[arXiv:hep–ph/0212379]

35. N. Fornengo, S. Scopel
Temporal distortion of annual modulation at low recoil energies
Physics Letters **B576** (2003) 189–194
[arXiv:hep–ph/0301132]

36. A. Bottino, F. Donato, N. Fornengo, S. Scopel
Lower bound on the neutralino mass from new data on CMB and implications for relic neutralinos
Physical Review D **68** (2003) 043506
[arXiv:hep–ph/0304080]

37. F. Donato, N. Fornengo, D. Maurin, P. Salati, R. Taillet
Antiprotons in cosmic rays from neutralino annihilation
Physical Review D **69** (2004) 063501
[arXiv:astro–ph/0306207]

38. A. Bottino, F. Donato, N. Fornengo, S. Scopel
Light neutralinos and WIMP direct searches
Physical Review D **69** (2004) 037302
[arXiv:hep–ph/0307303]

39. A. Bottino, F. Donato, N. Fornengo, S. Scopel
Indirect signals from light neutralinos in supersymmetric models without gaugino mass unification
Physical Review D **70** (2004) 015005
[arXiv:hep–ph/0401186]

40. R. Catena, N. Fornengo, A. Masiero, M. Pietroni, F. Rosati
Dark matter relic abundance and scalar-tensor dark energy
Physical Review D **70** (2004) 063519
[arXiv:astro–ph/0403614]

41. N. Fornengo, L. Pieri, S. Scopel
Neutralino annihilation into gamma-rays in the Milky Way and in external galaxies
Physical Review D **70** (2004) 103529
[arXiv:hep–ph/0401186]

42. M. Cirelli, N. Fornengo, T. Montaruli, I. Sokalski, A. Strumia, F. Vissani
Spectra of neutrinos from dark matter annihilations
Nuclear Physics **B727** (2005) 99–138 [Erratum-ibid **B790** (2008) 338–344]
[arXiv:hep–ph/0506298]

43. A. Bottino, F. Donato, N. Fornengo, P. Salati
Antiproton fluxes from light neutralinos
Physical Review D **72** (2005) 083518
[arXiv:hep–ph/0507086]

44. A. Bottino, F. Donato, N. Fornengo, S. Scopel
Do current WIMP direct measurements constrain light relic neutralinos?
Physical Review D **72** (2005) 083521
[arXiv:hep–ph/0508270]

45. M. Cirelli, N. Fornengo, A. Strumia
Minimal dark matter
Nuclear Physics **B 753** (2006) 178–194
[arXiv:hep–ph/0512090]

46. M. Schelke, R. Catena, N. Fornengo, A. Masiero, M. Pietroni
Constraining pre Big–Bang–Nucleosynthesis expansion using cosmic antiprotons
Physical Review D **74** (2006) 083505
[arXiv:hep–ph/0605287]

47. F. Donato, N. Fornengo, M. Schelke
Additional bounds on the pre Big–Bang–Nucleosynthesis expansion by means of gamma–rays from the galactic center
Journal of Cosmology and Astroparticle Physics (JCAP) **0703** (2007) 021
[arXiv:hep–ph/0612374]

48. C. Arina, N. Fornengo
Sneutrino cold dark matter, a new analysis: relic abundance and detection rates
Journal of High Energy Physics (JHEP) **0711** (2007) 029
[arXiv:0709.4477 [hep–ph]]

49. A. Bottino, F. Donato, N. Fornengo, S. Scopel
Zooming in on light relic neutralinos by direct detection and measurements of galactic antimatter
Physical Review D **77** (2008) 015002
[arXiv:0710.0553 [hep–ph]]

50. T. Delahaye, R. Lineros, F. Donato, N. Fornengo, P. Salati
Positrons from dark matter annihilation in the galactic halo: theoretical uncertainties
Physical Review D **77** (2008) 063527
[arXiv:0712.2312 [astro–ph]]

51. R. Catena, N. Fornengo, A. Masiero, M. Pietroni, M. Schelke
Enlarging mSUGRA parameter space by decreasing pre-BBN hubble rate in scalar-tensor cosmologies
Journal of High Energy Physics (JHEP) **0810** (2008) 003
[arXiv:0712.3173 [hep–ph]]

52. A. Bottino, N. Fornengo, G. Polesello, S. Scopel
Light neutralinos at CERN LHC in cosmologically–inspired scenarios: new benchmarks in the search for supersymmetry
Physical Review D **77** (2008) 115026
[arXiv:0801.3334 [hep–ph]]

53. A. Bottino, F. Donato, N. Fornengo, S. Scopel
Upper bounds on signals due to WIMP self–annihilation: comments on the case of the synchrotron radiation from the galactic center and the WMAP haze
Physical Review D **77** (2008) 127301
[arXiv:0802.0714 [hep–ph]]

54. F. Donato, N. Fornengo, D. Maurin
Antideuteron fluxes from dark matter annihilation in diffusion models
Physical Review D **78** (2008) 043506
[arXiv:0803.2640 [hep–ph]]

55. C. Arina, F. Bazzocchi, N. Fornengo, J.C. Romao, J.W.F. Valle
Minimal supergravity sneutrino dark matter and inverse seesaw neutrino masses
Physical Review Letters **101** (2008) 161802
[arXiv:0806.3225 [hep–ph]]

56. A. Bottino, F. Donato, N. Fornengo, S. Scopel
Interpreting the recent results on direct search for dark matter particles in terms of relic neutralinos
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45. N. Fornengo
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46. R. Catena, N. Fornengo, A. Masiero, M. Pietroni, F. Rosati
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48. L. Pieri, N. Fornengo, S. Scopel
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49. L. Pieri, N. Fornengo, S. Scopel
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50. N. Fornengo
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52. N. Fornengo
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53. M. Schelke, R. Catena, N. Fornengo, A. Masiero, M. Pietroni
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54. M. Schelke, R. Catena, F. Donato, N. Fornengo, A. Masiero, M. Pietroni
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56. N. Fornengo, T. Delahaye, R. Lineros, F. Donato, P. Salati
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58. N. Fornengo
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61. T. Delahaye, R. Lineros, J. Lavalle, F. Donato, N. Fornengo, P. Salati
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62. N. Fornengo
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63. N. Fornengo
Astroparticle physics view on supersymmetry
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64. N. Fornengo
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Proceedings of the "International Workshop on Very Large Neutrino Telescopes (VLVvT09)", Athens

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65. N. Fornengo
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66. N. Fornengo
Lecture on the theory of particle dark matter
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67. N. Fornengo
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68. N. Fornengo
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69. N. Fornengo
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Proceedings of the "Workshop on Dark Matter, Unification and Neutrino Physics (CETUP* 2012)", Lead/Deadwood (SK, USA), July 2012
AIP Conf. Proc. **1534** (2012) 86-95

70. N. Fornengo
A novel approach in the WIMP quest: Cross-correlation of gamma-ray anisotropies and cosmic shear
Proceedings of the "7th International Conference on Interconnection between Particle Physics and Cosmology (PPC 2013)", Lead/Deadwood (SK, USA), July 2013
AIP Conf. Proc. **1604** (2014) 43-52

71. N. Fornengo
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Proceedings of the "XII Marcel Grossmann Meeting on Recent Developments in Theoretical and Experimental General Relativity, Gravitation, and Relativistic Field Theory (MG13)", Stockholm, July 2012
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72. N. Fornengo
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73. A. Vittino, N. Fornengo, L. Maccione
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Proceedings of RICAP 2013), Roma (Italy), May 2013
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74. A. Vittino, N. Fornengo, L. Maccione
The role of antiprotons and antideuterons in dark matter indirect detection
Proceedings of the "14th ICATPP Conference", Como (Italy) September 2013
Astroparticle, Particle, Space Physics and Detectors for Physics Applications, page 225-229, World Scientific 2014

75. N. Fornengo
Astrophysical interpretation of the ASM-02 leptonic data
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76. P. von Doetinchem, T. Aramaki, S. Boggs, S. Bufalino, L. Dal, F. Donato, N. Fornengo, H. Fuke, M. Grefe, C. Hailey, B. Hamilton, A. Ibarra, J. Mitchell, I. Mognet, R.A. Ong, R. Pereira, K. Perez, A. Putze, A. Raklev, P. Salati, M. Sasaki, G. Tarle, A. Urbano, A. Vittino, S. Wild, W. Xue, K. Yoshimura
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77. S. Camera, M. Fornasa, N. Fornengo, M. Regis
Detecting particle dark matter signatures by cross-correlating gamma-ray anisotropies with weak lensing
Proceedings of TAUP 2015, Torino (Italy), September 2015
J. Phys. Conf. Ser. **718** (2016) 032003

78. H.S. Zechlin, A. Cuoco, F. Donato, N. Fornengo, M. Regis
Statistical measurement of the gamma-ray source-count distribution as a function of energy
Proceedings of the "6th International Symposium on High-Energy Gamma-Ray Astronomy (Gamma 2016)", Heidelberg (Germany), July 2016
AIP Conf. Proc. **1792** (2017) 070020

79. N. Fornengo
Multimessenger astrophysics (with a take on dark matter)
Proceedings of Neutrino Oscillation Workshop NOW 2016, Otranto (Italy), September 2016
PoS **NOW2016** (2017) 044

80. N. Fornengo
Dark matter overview
Proceedings of the "25th European Cosmic Ray Symposium (ECRS 2016)", Torino (Italy), September 2016
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PARTICIPATION AT CONFERENCES AND SCHOOLS

1. Workshop *La materia oscura: aspetti cosmologici e particellari* (Dark Matter: cosmology and particles), University of Torino, Torino, Italy, April 18, 1991
2. Workshop *Nuclear Physics and Astrophysics*, Laboratori Nazionali del Gran Sasso, l'Aquila, Italy, July 13, 1991
3. International School of Astrophysics "D. Chalonge" - 1st Course: *Current Topics in Astrofundamental Physics*, Erice, Italy, September 1–8, 1991, Director of the Course: Prof. Norma Sanchez
4. *Scuola di Studi Avanzata in Fisica Nucleare e Subnucleare* (School on Advanced Studies in Nuclear and Subnuclear Physics), IV Course, INFN, International Center for Theoretical Physics (ICTP), Trieste, Italy, March 15–21, 1992
5. *Scuola di Studi Avanzata in Fisica Nucleare e Subnucleare* (School on Advanced Studies in Nuclear and Subnuclear Physics), IV Course, INFN, University of Ferrara, Ferrara, Italy, May 17–24, 1992
6. Workshop *Dark Matter and Large Scale Structure* - University of Torino, Torino, Italy, October 15–16, 1992
7. Workshop *The Dark Side of the Universe: experimental efforts and theoretical framework*, University of Tor Vergata, Roma, Italy, June 23–25, 1993
8. Ettore Majorana International School of Subnuclear Physics, 31th Course: *From Supersymmetry to the Origin of Space Time*, Erice, Italy, July 4–12, 1993, Director of the School: A.Zichichi
9. Summer Institute *From Particle Physics to Cosmology* (Directors: R. Barbieri, A. Masiero), Laboratori Nazionali del Gran Sasso, L'Aquila, Italy, September 6–17, 1993
10. *Theoretical and Phenomenological Aspects of Underground Physics* (TAUP 93), Laboratori Nazionali del Gran Sasso, l'Aquila, Italy, September 19–23, 1993
11. International Symposium on *Critique of the Sources of Dark Matter in the Universe*, University of California, Los Angeles (UCLA), Bel Air, California, February 16–18, 1994
12. *Strategies for the Detection of Dark Matter Particles*, Lawrence Berkeley Laboratory, University of California, Berkeley, California, February 21–24, 1994
13. *Trends in Astroparticle Physics*, University of Stockholm, Stockholm, Sweden, September 22–25, 1994
14. *SUSY 1996 - The 4th International Conference on Supersymmetry* University of Maryland, College Park, USA, May 29 – June 1, 1996
15. Third Warsaw International Workshop *Physics from the Planck Scale to the Electroweak Scale*, Warsaw, Poland, April 2–5, 1997
16. *Topics in Astroparticle and Underground Physics* (TAUP 97), Laboratori Nazionali del Gran Sasso, l'Aquila, September 7–11, 1997
17. International workshop on *Physics beyond the standard model: from theory to experiment (Valencia97)*, Valencia, Spain, October 13–17, 1997
18. Workshop *DM97: Dark matter: perspectives and projects*, Osservatorio Astronomico and ICTP, Trieste, December 8–11, 1997
19. Workshop *Tools for SUSY*, Laboratoire d'Annecy–le–Vieux de Physique des Particules (LAPP), Annecy, France, March 12–13, 1998

20. *Educational TEMPUS Workshop on Supersymmetry*, Warsaw University, Warsaw, Poland, May 22–23, 1998
21. Ringberg Euroconference *New trends in neutrino physics*, Ringberg Castle, Tegernsee, Germany, May 24–29, 1998
22. Workshop *Cosmology and Particle Physics CAPP–98*, CERN, Geneva, Switzerland, June 8–12, 1998
23. INFN FA21 Collaboration meeting, SISSA, Trieste, Italy, June 26, 1998
24. International Workshop on the *Identification of Dark Matter (IDM98)*, Buxton, England, September 7–11, 1998
25. International Workshop *Particle Physics and the Early Universe (COSMO–98)*, Asilomar, Monterey, California, USA, November 15–20, 1998
26. International Workshop *Weak Interactions and Neutrinos (WIN99)*, Cape Town, South Africa, January 24–30, 1999
27. International Workshop of the European Network *Physics Beyond The Standard Model*, SISSA, Trieste, Italy, February 24–27, 1999
28. International Workshop on *Particles in Astrophysics and Cosmology: From Theory to Observation (Valencia99)*, Valencia, May 3–8, 1999
29. Sixth International Workshop on *Topics in Astroparticle and Underground Physics (TAUP99)* Collège de France, Paris, September 6–10, 1999
30. Fourth International Symposium on *Sources and Detection of Dark Matter/Energy in the Universe*, Marina del Rey, CA, February 23-25, 2000
31. Ninth *Marcel Grossmann Meeting*, University of Roma "La Sapienza", Roma, July 2-8, 2000
32. Gran Sasso Summer Institute *Dark Matter and Supersymmetry*, Laboratori Nazionali del Gran Sasso, L'Aquila, July 8-21, 2000
33. Third International Conference on *Dark Matter in Astro and Particle Physics (DARK2000)*, Heidelberg, Germany, July 10-15, 2000
34. EuroConference on *Frontiers in Particle Astrophysics and Cosmology*, San Feliu de Guixols, Spain, September 30 - October 15, 2000
35. *Convegno Informale di Fisica Teorica*, Palazzone della Scuola Normale Superiore, Cortona, Italy, May 30 - June 2, 2001
36. Third *International Conference on non-accelerator new physics (NANP01)*, Dubna, Russia, June 19-23, 2001
37. First *National School on Astroparticle Physics*, Conca Specchiulla (Otranto), Italy, June 11-16, 2001
38. *Topics in Astroparticle and Underground Physics (TAUP 2001)*, Laboratori Nazionali del Gran Sasso, Italy, September 8-12, 2001
39. VIII *Mexican Workshop on Particles and Fields*, Zacatecas, Mexico, November 14-20, 2001
40. *Sources and detection of dark matter and dark energy in the Universe (DM2002)*, Marina del Rey, CA, February 20-22, 2002
41. *Incontri sulla Fisica delle Alte Energie (XIV IFAE)*, Parma (Italy), April 3-5, 2002

42. Meeting on *Inflation, dark matter and large scale structure of the Universe* Ferrara (Italy), May 9-10, 2002

43. Gran Sasso Summer Institute *New Dimensions in Astroparticle Physics*, Laboratori Nazionali del Gran Sasso, L'Aquila, July 7-19, 2002

44. International Workshop on *Particle Physics and the Early Universe (COSMO-02)*, Adler Planetarium, Chicago (USA), September 18-21, 2002

45. Workshop on *Large TPC for low energy rare even detection*, Collège de France, Paris, December 5-6, 2002

46. Workshop on *Problemi Attuali di Fisica Teorica*, IIASS "E.R.Caianiello" - Vietri sul Mare (Italy), April 11–16, 2003

47. Eighth International Workshop on *Topics in Astroparticle and Underground Physics (TAUP 2003)*, University of Washington, Seattle, Washington (USA), September 5–9, 2003

48. International Workshop on *Astroparticle and High Energy Physics (AHEP 2003)* Valencia, Spain, October 14–18, 2003

49. Second International Conference on *Particle and Fundmental Physics in Space (SPACEPART03)* Washington D.C. (USA), December 10–12, 2003

50. Fifth International Heidelberg Conference on *Dark Matter in Astro and Particle Physics (DARK2004)* Texas A&M University, College Station, TX, USA, October 3–9, 2004

51. Workshop on *Incontri di Fisica delle Alte Energie (IFAE 2005)*, Università di Catania, Italy, March 30 – April 2, 2005

52. First Annual Meeting of the *European Network on Theoretical Astroparticle Physics (ENTAPP 2005)*, University of Valencia, Spain, April 11–15, 2005

53. Workshop on *Cosmic Connections: Matter-antimatter asymmetry, dark matter, and dark energy: are they related?*, Villa La Magia, Quarrata, Pistoia, Italy, April 18–23, 2005

54. International School on Astroparticle Physics ISAPP 2005 on *High energy cosmic rays*, Villa Carlotta, Belgirate (VB), Italy, July 1–9, 2005

55. IX International Conference on *Topics in Astroparticle and Underground Physics (TAUP 2005)*, Zaragoza, Spain, September 11–14, 2005

56. *Galileo Galilei Institute Inaugural Conference*, Firenze, Italy, September 19 - 21, 2005

57. *European Astroparticle Physics Town Meeting*, Munich, Germany, November 23–25, 2005

58. *Tools for SUSY and the New Physics*, LAPTH Annecy, France, June 26–28, 2006

59. *Committee on Space Research 36th COSPAR Scientific Assembly* Beijing, China, July 16-23, 2006

60. *Astroparticle and Cosmology*, the Galileo Galilei Institute for Theoretical Physics, Arcetri, August 28 – September 15, 2006

61. *XCII Congresso Nazionale*, Società Italiana di Fisica (SIF), Torino, September 18–23, 2006

62. *ILIAS/N6-ENTApP Meeting - European Network on Theoretical Astroparticle Physics*, LPNHE Jussieu, Paris, September 26, 2006

63. *III Annual Meeting ILIAS/N6-ENTApP - European Network on Theoretical Astroparticle Physics*, Institut d'Astrophysique (IAP), Paris, France, December 12–14, 2006

64. *Annual Meeting ILIAS/N3 Network on Direct Dark Matter Detection*, Institut d'Astrophysique (IAP), Paris, France, February 2, 2007

65. *IV ILIAS Annual Meeting*, Chambery, France, February 26–28, 2007

66. International Workshop on the *Interconnection between particle physics and cosmology (PPC07)*, Texas A&M University, College Station (TX, USA), May 14–18, 2007

67. *Progress on Old and New Themes in Cosmology (PONT d'Avignon 2008)*, Palais des Papes, Avignon (France), April 21–25, 2008

68. II International Workshop on the *Interconnection between particle physics and cosmology (PPC08)*, University of New Mexico, Albuquerque (NM, USA), May 19–23, 2007

69. *International Doctorate on AstroParticle Physics Annual Meeting (IDAPP 2D - 2008)* Astroparticule et Cosmologie (APC), Universitè Paris 7, Paris (France), June 9–10, 2008

70. International Workshop *Neutrino Oscillation Workshop (NOW 2008)*, Conca Specchiulla (Otranto, Lecce, Italy), September 6–13, 2008

71. *XCIV Congresso Nazionale*, Società Italiana di Fisica (SIF), Genova, September 22–27, 2008

72. *Dark Matter Conference*, in the context of the workshop *New Horizons for Modern Cosmology*, Galileo Galilei Institute for Theoretical Physics (GGI), Firenze, February 9–11, 2009.

73. *PROMETEO I: LHC physics and cosmology*, University of Valencia, Spain, March 2–6, 2009.

74. *TANGO in PARIS: Testing Astroparticle with the New GeV/TeV Observations Positrons And electRons: Identifying the Sources*, Institut d'Astrophysique de Paris, France, May 3–6, 2009.

75. *Ecole Internationale Daniel Chalonge: Physics of the Standard Model of the Universe: theory and observations*, Colegio de España, Cité Internationale Universitaire de Paris, Francia, June 4–5, 2009.

76. *International Doctorate on AstroParticle Physics Annual Meeting (IDAPP 2D - 2009)*, Varenna (Italy), June 17–10, 2008.

77. XI International Conference on *Topics in Astroparticle and Underground Physics (TAUP 2009)*, Rome, Italy, July 1–5, 2009

78. *XIV Lomonosov Conferences on Elementary Particle Physics*, Moscow State University, Moscow, Russia, August 19–25, 2009

79. *Workshop in Honour of Riccardo Giacconi*, Department of General Physics, University of Torino, Italy, September 15, 2009

80. *Theoretical workshop on Dark Matters*, IFT–UAM/CSIS, Madrid, Spain, September 16–18, 2009

81. *LC09: e^+e^- Physics at the TeV Scale and the Dark Matter Connection*, Perugia, Italy, September 21–24, 2009

82. *XCV Congresso Nazionale*, Società Italiana di Fisica (SIF), Bari, Italy, September 28 – October 3, 2009

83. *International Workshop on Very Large Neutrino Telescopes (VLVvT09)*, Eugenides Foundation, Athens, Greece, October 13–15, 2009

84. *Astroparticle Physics with AMS-02: a preparatory meeting to data interpretation*, Pisa, Italy, December 1–2, 2009

85. *First MULTIDARK Consolider Workshop*, Madrid, Spain, January 25–27, 2010

86. *Workshop on the Next Dark Matter Experimental Researches at LNGS (WONDER)*, Laboratori Nazionali del Gran Sasso (LNGS), Assergi, Italy, March 22–23, 2010

87. *The Dark Matter Connection: Theory and Experiment*, in the context of the workshop *Dark Matter: Its Origin, Nature and Prospects for Detection*, Galileo Galilei Institute for Theoretical Physics (GGI), Firenze, February 17–21, 2010.

88. *XXXII Convegno Informale di Fisica Teorica (CORTONA 2010)*, Palazzone della Scuola Normale, Cortona, Italy, May 26–29, 2010

89. *National Workshop on Astroparticle Physics (INIFA 2010)*, Laboratori Nazionali di Frascati (LNF), Italy, June 22–23, 2010

90. *Second Multidark Consolider Workshop - Summary on Direct Detection of Dark Matter*, Instituto de Física de Cantabria (IFCA), Santander, Spain, June 28–30, 2010

91. IV International Workshop on the *Interconnection between particle physics and cosmology (PPC10)*, Biblioteca Nazionale Universitaria, Torino, Italy, July 12–16, 2010.

92. XVI International Symposium on *Particles, Strings and Cosmology (PASCOS 2010)*, Valencia (Spain), July 19–23, 2010

93. *Neutrino Oscillation Workshop (NOW 2010)*, Conca Specchiulla (Otranto, Lecce, Italy), September 4–11, 2010

94. *IV UniverseNet School – Frontiers of Particle Cosmology*, Università del Salento, Lecce, Italy, September 13–18, 2010

95. *Highlights of Astroparticle Physics*, University of Torino, Italy, September 20, 2010

96. *IV International Pontecorvo Neutrino Physics School*, Alushta, Crimea, Ukraine, September 27 – October 1, 2010

97. Symposium on *Schiaparelli and his legacy*, Biblioteca Nazionale Universitaria, Torino, Italy, October 21, 2010.

98. *XVI IFT Xmas Workshop*, Instituto de Fisica Teorica/Universidad Autonoma de Madrid (Spain), December 15–17, 2010

99. *IV MultiDark Consolider Workshop*, Instituto de Fisica Teorica/Universidad Autonoma de Madrid, Madrid (Spain), April 4–6, 2011

100. *Origin of Mass 2011 LHC Training School*, CP^3 – Origins, University of Odense, Denmark, May 9–13, 2011

101. V International Workshop on the *Interconnection between particle physics and cosmology (PPC11)*, CERN, Geneva, Switzerland, June 14–18, 2011

102. *International Doctorate on AstroParticle Physics Annual Meeting (IDAPP 2D - 2011)*, APC, Paris (France), June 20–12, 2011

103. XII International Conference on *Topics in Astroparticle and Underground Physics (TAUP 2011)*, Munich (Germany), September 5–9, 2011

104. *XCVII Congresso Nazionale della Societa di Fisica Italiana (SIF)*, L'Aquila (Italy), September 26–30, 2011

105. *Dark Workshop @ GGI*, Galileo Galilei Institute for Theoretical Physics, Firenze (Italy), October 25–27, 2011

106. *Dark Universe*, first meeting of the Helmoltz–Allianz on Astroparticle Physics, KIT Karlsruhe (Germany), January 26–27, 2012

107. *Planck 2012: from the Planck Scale to the Electroweak Scale*, Warsaw (Poland), KIT Karlsruhe (Germany), May 28, 2012

108. VIII International Workshop on the *Dark Side of the Universe (DSU 2012)*, Búzios, Rio de Janeiro (Brasil), June 10–15, 2012

109. XII *Marcel Grossmann Meeting on Recent Developments in Theoretical and Experimental General Relativity, Gravitation, and Relativistic Field Theory (MG13)*, Stockholm (Sweden,) July 1–7, 2012

110. First *CETUP Workshop on Dark Matter*, Center for Theoretical Underground Physics and Related Areas (CETUP*), Deadwood (SK, USA), July 9–18, 2012

111. *Neutrino Oscillation Workshop (NOW 2012)*, Conca Specchiulla (Italy), September 9–16, 2012

112. *National Congress of the Italian Physical Society (SIF)*, Napoli (Italy), September 17–21, 2012

113. *IDAPP's Two Days 2012*, Ferrara (Italy), October 29–31, 2012

114. *8th MultiDark Consolider Workshop*, Granada (Spain), April 17–19, 2013

115. Second *CETUP Workshop on Dark Matter*, Center for Theoretical Underground Physics and Related Areas (CETUP*), Deadwood (SK, USA), July 3–8, 2013

116. *VII International Conference on Interconnections between Particle Physics and Cosmology (PPC2013)*, Deadwood (SK, USA), July 8–13, 2013

117. *16h Lomonosov Conference on Elementary Particle Physics*, Moscow (Russia), August 22–28, 2013

118. XIII International Conference on *Topics in Astroparticle and Underground Physics (TAUP 2013)*, Asilomar (CA, USA), September 9–13, 2013

119. *9th MultiDark Consolider Workshop*, Alcalá de Henares (Spain), November 6–8, 2013

120. *Belgian Meeting on Fundamental Interactions*, UCL, Louvain-la-Neuve, December 12, 2013

121. *What Next DM GdL Meeting 1: Direct Detection* (March 18, 2014), *What Next DM GdL Meeting 2: Indirect Detection* (March 20, 2014), *What Next DM GdL Meeting 3: Accelerator Searches* (March 21, 2014), web meetings for the activities of the INFN What Next Program

122. *INFN What Next* General Assembly, Roma (Italy), April 7–8, 2014

123. *Mini–Workshop on Astroparticle Physics at TeV and Beyond*, Pisa (Italy), May 8–9, 2014

124. First *Cosmic ray antideuteron workshop (Antideuterons 2014)*, UCLA (Los Angeles, USA), June 5–6, 2014

125. *High Energy Messengers: Connecting the Non-Thermal Extragalactic Backgrounds*, University of Chicago and Kavli Institute for Cosmological Physics, (Chicago, USA), June 9–11, 2014

126. *20th International Symposium on Particles, Strings and Cosmology (PASCOS 2014)*, Warsaw (Poland), June 22–27, 2014

127. *What Next DM GdL SeeVogh Meeting 4: Accelerator Searches* (July 10, 2014), web meeting for the activities of the INFN What Next Program

128. *Multi-wavelength and multi-messenger investigation of the visible and dark Universe (ISAPP 2014)*, Belgirate (Italy), July 21–30, 2014

129. *Neutrino Oscillation Workshop (NOW 2014)*, Conca Specchiulla (Otranto, Lecce, Italy), September 7-14, 2014

130. *XXI Conferenza SIGRAV Relatività Generale e Fisica della Gravitazione*, Alessandria (Italy), September 15-19, 2014

131. *Exploring the Dark Sector*, Seoul (South Korea), March 16-20, 2015

132. *INFN What Next* General Assembly, Roma (Italy), April 1–2, 2014

133. *AMS Days at CERN*, Geneva (Switzeland), April 15-17, 2015

134. *Neutrinos and Dark Matter in Nuclear Physics 2015*, Jyväskylä (Finland), June 1-5, 2015

135. *Light dark matter searches at accelerators (LDMA 2015)*, Camogli (Italy), June 24-26, 2015

136. *The p-He cross section measurement: a physics case from cosmic rays*, Torino (Italy), July 6-7, 2015

137. *Fermi Open Day*, Torino (Italy), September 4, 2015

138. *What Next: Onde Gravitazionali, Incontro TEONGRAV – Virgo*, Cascina (Pisa, Italy), October 15-16, 2015

139. *IBS-MultiDark Joint Workshop on Dark Matter and XIII MultiDark Consolider Workshop*, IFT-UAM/CSIC Madrid (Spain), November 23-28, 2015

140. INFN General Assembly *Giornate di Studio sul Piano Triennale INFN 2016-2018*, Catania (Italy), December 3-4, 2015

141. *Fermi/LAT Italian Collaboration Meeting*, Torino (Italy), December 14-16, 2015

142. *Challenges in the Dark Sector: Alternatives to the WIMP paradigm*, Laboratori Nazionali di Frascati (Italy), December 16-18, 2015

143. *INFN What Next* General Assembly, Roma (Italy), February 16–17, 2016

144. *Cosmic Microwave Background Day*, Italian Space Agency (ASI), (Italy), March 30, 2016

145. *2nd Anisotropic Universe Workshop ?Unveiling the Anisotropic Universe?*, Amsterdam (The Netherlands), April 11-13, 2016

146. *Theoretical Cosmology in the Era of Large Surveys*, GGI Florence (Italy), May 2-5, 2016

147. *From the Planck Scale to the Electroweak Scale (PLANCK 2016)*, Valencia (Spain), May 23-27, 2016

148. *ASI and the cosmic rays missions in space*, Italian Space Agency (ASI), (Italy), May 31, 2016

149. *Dark Matter and Stars*, LPTHE/CNRS and Univesit?e Pierre et Marie Curie, Paris (France), June 6-8, 2016

150. 12th International Workshop on the *Dark Side of the Universe*, Bergen (Norway), July 15-29, 2016

151. *Neutrino Oscillation Workshop (NOW 2016*, Otranto (Italy), September 4-11, 2016

152. *XXV European Cosmic Ray Symposium (ECRS 2016*, Torino (Italy), September 4-9, 2016

153. *TeV Particle Astrophysics (TeVPA 2016)*, CERN, Geneva (Switzerland), September 12-16, 2016

154. *102° National Congress of the Italian Physics Society (SIF 2016)*, Padova (Italy), September 26-30, 2016

155. *Inaugural Conference of the Arnold-Regge Center for Algebra, Geometry and Theoretical Physics*, Torino (Italy), February 27-March 2, 2017

156. *XSCRC2017: Cross sections for Cosmic Rays @ CERN*, CERN, March 29-31, 2017

157. *XIV Seminar on Software for Nuclear, Subnuclear and Applied Physics*, Alghero (Italy), June 4-9, 2017

158. *Dark Matter Signatures*, Odense (Denmark), June 12-14, 2017

159. *Varenna SIF School on Gravitational Waves and Cosmology*, Varenna (Italy), July 3-12, 2017

160. *Radio Synchrotron Background Conference*, Richmond (VA, USA), July 19-21, 2017

161. *XV International Conference on Topics in Astroparticle and Underground Physics (TAUP 2017)*, Sudbury (Canada), July 24-28, 2017

162. *VII International Pontecorvo Neutrino Physics School*, Prague (Czech Republic), August 20-September 1, 2017

163. *Barolo Astroparticle Meeting (BAM 2017)*, Barolo (Italy), September 3-6, 2017

164. *Galileo Galilei Institute Conference: Collider Physics and the Cosmos*, Firenze (Italy), October 9-13, 2017

TALKS AT INTERNATIONAL CONFERENCES

1. Relic Abundance of Neutralinos
   at *Dark Matter and Large Scale Structure*, University of Torino, Torino, Italy, October 16, 1992

2. Neutralino Dark Matter
   at *Theoretical and Phenomenological Aspects of Underground Physics* (TAUP 93), Laboratori Nazionali del Gran Sasso, L'Aquila, Italy, September 20, 1993

3. Neutralino Dark Matter
   at *Strategies for the Detection of Dark Matter Particles*, Lawrence Berkeley Laboratory, University of California, Berkeley, California, February 22, 1994

4. Signals for Neutralino Annihilation in our Galaxy
   at *Trends in Astroparticle Physics*, University of Stockholm, Stockholm, Sweden, September 23, 1994

5. Neutralino dark matter in non–universal SUSY models
   at *SUSY 1996 - The 4th International Conference on Supersymmetry*, University of Maryland, College Park, USA, May 30, 1996

6. Relic Neutralinos as Cold Dark Matter Candidates
   at l 3rd Warsaw International Workshop *Physics from the Planck Scale to the Electroweak scale*, Warsaw, Poland, April 2, 1997

7. Gravitational effects on the neutrino oscillation in vacuum
   at Topics in Astroparticle and Underground Physics (TAUP 97), Laboratori Nazionali del Gran Sasso, L'Aquila, Italy, September 8, 1997

8. Detection rates of supersymmetric relic particles
   at the International workshop on *Physics Beyond the Standard Model: from theory to experiment* (Valencia97), Valencia, Spain, October 13, 1997

9. Supersymmetric candidates for dark matter
   at the workshop *DM97: Dark matter: perspectives and projects*, Trieste, Osservatorio Astronomico and ICTP, Trieste, December 8, 1997

10. Detection rates of relic neutralinos
    at the workshop *Tools for SUSY*, Laboratoire d'Annecy–le–Vieux de Physique des Particules (LAPP), Annecy, France, March 13, 1998

11. Neutralino dark matter: direct and indirect detection rates
    at the Ringberg Euroconference *New trends in neutrino physics*, Ringberg Castle, Tegernsee, Germany, May 29, 1998

12. Supersymmetric candidates for dark matter
    at the INFN FA21 Collaboration meeting, SISSA, Trieste, Italy, June 26, 1998

13. Supersymmetric dark matter: MSSM and SUGRA schemes in the light of a possible annual modulation effect in WIMP direct search
    at the 2nd International Workshop on the *Identification of Dark Matter (IDM98)*, Buxton, England, September 8, 1998

14. Relic neutralinos and dark matter
    at the International Workshop *Particle Physics and the Early Universe (COSMO–98)*, Asilomar, Monterey, California, USA, November 18, 1998

15. Neutrino signals from WIMP annihilation
at the International Workshop *Weak Interactions and Neutrinos (WIN99)*, Cape Town, South Africa, January 29, 1999

16. Neutrino oscillation effects on the indirect signal of neutralino dark matter from the Earth core
at the International Workshop of the European Network *Physics Beyond The Standard Model*, SISSA, Trieste, Italy, February 24, 1999

17. Supersymmetric Dark Matter - Direct Searches
invited talk at the International Workshop on *Particles in Astrophysics and Cosmology: From Theory to Observation (Valencia99)*, Valencia, Spain, May 3, 1999

18. Relic Neutralinos - update on neutralino–nucleon cross–section
at the Sixth International Workshop on *Topics in Astroparticle and Underground Physics (TAUP99)* Collège de France, Paris, France, September 6, 1999

19. Standard and Exotic Interpretations of the Atmospheric Neutrino Data
at the Sixth International Workshop on *Topics in Astroparticle and Underground Physics (TAUP99)* Collège de France, Paris, France, September 7 1999

20. Relic Neutralinos and Dark Matter
at the Fourth International Symposium on *Sources and Detection of Dark Matter/Energy in the Universe*, Marina del Rey, CA, February 24 2000

21. Solutions to the Atmospheric Neutrino Problem
invited talk at the Ninth *Marcel Grossmann Meeting*, University of Roma "La Sapienza", Roma, July 5 2000

22. Supersymmetric dark matter
invited talk at the Gran Sasso Summer Institute *Dark Matter and Supersymmetry*, Laboratori Nazionali del Gran Sasso, L'Aquila, July 9 2000

23. Neutrino Oscillation effects in indirect detection of dark matter
invited talk at the Third International Conference on *Dark Matter in Astro and Particle Physics (DARK2000)* Heidelberg, Germany, July 13 2000

24. Neutralino dark matter: direct and indirect detection rates
invited talk at the EuroConference on *Frontiers in Particle Astrophysics and Cosmology*, San Feliu de Guixols, Spain, October 2000

25. Supersymmetric candidates for non-baryonic dark matter
at the *Convegno Informale di Fisica Teorica*, Palazzone della Scuola Normale Superiore, Cortona, Italy, May 30 2001

26. Supersymmetric candidates for non-baryonic dark matter
at the Third *International Conference on non-accelerator new physics (NANP01)*, Dubna, Russia, June 21 2001

27. Dark matter and its candidates
invited talk at the First *National School on Astroparticle Physics*, Conca Specchiulla (Otranto), Italy, June 12 and 13 2001

28. Candidates for non-baryonic dark matter
invited plenary talk at the *Topics in Astroparticle and Underground Physics (TAUP 2001)*, Laboratori Nazionali del Gran Sasso, Italy, September 8 2001

29. Candidates for non-baryonic dark matter
invited talk at the VIII *Mexican Workshop on Particles and Fields*, Zacatecas, Mexico, November 17 2001

30. Cold dark matter and neutralinos
at *Sources and detection of dark matter and dark energy in the Universe (DM2002)*, Marina del Rey, CA, February 21 2002

31. Non-baryonic dark matter and models of supersymmetry
invited talk at *Incontri sulla Fisica delle Alte Energie (XIV IFAE)*, Parma (Italy), April 3-5, 2002

32. Neutralino dark matter: relic abundance and searches
invited talk at the INFN PD51 Collboration meeting on *Inflation, dark matter and large scale structure of the Universe* Ferrara (Italy), May 10 2002

33. Supersymmetric dark matter
invited talk at the Gran Sasso Summer Institute *New Dimensions in Astroparticle Physics*, Laboratori Nazionali del Gran Sasso, L'Aquila, July 15 2002

34. Dark relics in supersymmetry
at the International Workshop on *Particle Physics and the Early Universe (COSMO-02)*, Adler Planetarium, Chicago (USA), September 20 2002

35. Theoretical aspects in direct detection of particle dark matter
invited talk at the Workshop on *Large TPC for low energy rare even detection*, Collège de France, Paris, December 6, 2002

36. Relic particles and dark matter
invited talk at *Problemi Attuali di Fisica Teorica*, IIASS "E.R.Caianiello" - Vietri sul Mare (Italy), April 11, 2003

37. Neutralino Dark Matter and Gaugino Non-Universality
at the Eighth International Workshop on *Topics in Astroparticle and Underground Physics (TAUP 2003)*, University of Washington, Seattle, Washington (USA), September 5, 2003

38. Supersymmetric dark matter with gaugino non-universality
at the International Workshop on *Astroparticle and High Energy Physics (AHEP 2003)* Valencia, Spain, October 15, 2003

39. Neutralino dark matter and gaugino non-universality [poster]
at the Second International Conference on *Particle and Fundmental Physics in Space (SPACEPART03)* Washington D.C. (USA), December 10–12, 2003

40. Light Neutralino Dark Matter In Gaugino Non-Universal Models
invited talk at the Fifth International Heidelberg Conference on *Dark Matter in Astro and Particle Physics (DARK2004)* Texas A&M University, College Station, TX, USA, October 5, 2004

41. Particle dark matter: searching for new physics without accelerators
invited talk at the Workshop *Incontri di Fisica delle Alte Energie (IFAE 2005)*, Universitá di Catania, Italy, March 30, 2005

42. Particle dark matter: searching for new physics without accelerators
at the First Annual Meeting of the *European Network on Theoretical Astroparticle Physics (ENTAPP 2005)*, University of Valencia, Spain, April 11, 2005

43. Light Neutralino Dark Matter in Gaugino Non-Universal Models
at the IX International Conference on *Topics in Astroparticle and Underground Physics (TAUP 2005)*, Zaragoza, Spain, September 11, 2005.

44. Direct Searches and the Torino Code
invited talk at the Workshop *Tools for SUSY and the New Physics*, LAPTH, Annecy, France, June 28, 2006

45. Status and Perspectives of Indirect and Direct Dark Matter Searches
invited talk at the International Conference *Committee on Space Research: 36th COSPAR Scientific Assembly* Beijing, China, July 22, 2006

46. The hunt for particle dark matter
invited talk at the *XCII Congresso Nazionale*, Società Italiana di Fisica (SIF), Torino, September 20, 2006

47. Dark matter detection rates
invited talk at the International Workshop on the *Interconnection between particle physics and cosmology (PPC07)*, Texas A&M University, College Station (TX, USA), May 15, 2007

48. Dark matter direct and indirect detection rates
invited talk at the International Workshop on the *Interconnection between particle physics and cosmology (PPC08)*, University of New Mexico, Albuquerque (NM, USA), May 20, 2008

49. Dark matter: gamma rays, antimatter and neutrinos
invited talk at the International Workshop *Neutrino Oscillation Workshop (NOW 2008)*, Conca Specchiulla (Otranto, Lecce, Italy), September 11, 2008

50. Particle dark matter: theoretical predictions and detection signals
invited talk at the *XCIV Congresso Nazionale*, Società Italiana di Fisica (SIF), Genova, September 22, 2008

51. In quest of particle dark matter signs
invited talk at the *Dark Matter Conference*, in the context of the workshop *New Horizons for Modern Cosmology*, Galileo Galilei Institute for Theoretical Physics (GGI), Firenze, February 9, 2009.

52. The interplay between dark matter searches and SUSY observables at LHC
invited talk at the *PROMETEO I: LHC physics and cosmology*, University of Valencia, Spain, March 5, 2009.

53. SUSY interpretation of the PAMELA data
invited talk at *TANGO in PARIS: Testing Astroparticle with the New GeV/TeV Observations Positrons And electRons: Identifying the Sources*, Institut d'Astrophysique de Paris, France, May 6, 2009.

54. Advances in the thoretical exploration of particle dark matter signals
invited talk at the *XIV Lomonosov Conferences on Elementary Particle Physics*, Moscow State University, Moscow, Russia, August 21, 2009.

55. Theoretical astroparticle physics
invited talk at the *Workshop in honour of Riccardo Giacconi*, Department of General Physics, University of Torino, Italy, September 15, 2009

56. A look on supersymmetric dark matter through indirect signals
invited talk at the *Theoretical workshop on dark matters*, IFT–UAM/CSIS, Madrid, Spain, September 17, 2009

57. Astroparticle Physics View on Supersymmetry: Impact of Cosmology and Dark Matter Searches
invited talk at *LC09: e^+e^- Physics at the TeV Scale and the Dark Matter Connection*, Perugia, Italy, September 22, 2009

58. The "Torino code": Numerical Tools for Particle Dark Matter
invited talk at *LC09: e^+e^- Physics at the TeV Scale and the Dark Matter Connection*, Perugia, Italy, September 22, 2009

59. Advances in the theoretical exploration of particle dark matter signals
invited talk at the *XCV Congresso Nazionale*, Società Italiana di Fisica (SIF), Bari, Italy, October 2, 2009

60. Advances in the theoretical exploration of particle dark matter signals
invited talk at the *International Workshop on Very Large Neutrino Telescopes (VLVvT09)*, Eugenides Foundation, Athens, Greece, October 13, 2009

61. Antiprotons and Antinuclei from Dark Matter annihilation
invited talk at *Astroparticle Physics with AMS-02: a preparatory meeting to data interpretation*, Pisa, Italy, December 2, 2009

62. Particles in astrophysics and cosmology: a dark connection
invited talk at the *First MULTIDARK Consolider Workshop*, Madrid, Spain, January 25–27, 2010

63. Phenomenological review on dark matter
invited talk at the *Workshop on the Next Dark Matter Experimental Researches at LNGS (WONDER)*, Laboratori Nazionali del Gran Sasso (LNGS), Assergi, Italy, March 22, 2010

64. Models of new physics and dark matter direct detection
invited talk at the workshop *The Dark Matter Connection: Theory and Experiment*, Galileo Galilei Institute for Theoretical Physics (GGI), Firenze, February 19, 2010.

65. Particles in Astrophysics and Cosmology a Dark Connection
invited talk at the *XXXII Convegno Informale di Fisica Teorica (CORTONA 2010)*, Palazzone della Scuola Normale, Cortona, Italy, May 28, 2010

66. Summary on Direct Detection of Dark Matter
invited talk at the *Second Multidark Consolider Workshop - Shedding Light in our Dark Universe*, Instituto de Física de Cantabria (IFCA), Santander, Spain, June 28, 2010

67. Particles in astrophysics and cosmology: a dark connection
invited closing talk at the *XVI International Symposium on Particles, Strings and Cosmology* (PASCOS 2010)', Valencia (Spain), July 28, 2010

68. Particles in astrophysics and cosmology: a dark connection
invited talk at the *XVI IFT Xmas Workshop*, Instituto de Fisica Teorica/Universidad Autonoma de Madrid (Spain), December 16, 2010

69. Light neutralino dark matter
invited talk at the *IV MultiDark Consolider Workshop*, Instituto de Fisica Teorica/Universidad Autonoma de Madrid (Spain), April 4, 2011

70. Dark matter search through cosmic rays
invited talk at *Origin of Mass 2011 LHC Training School*, CP^3 – Origins, University of Odense, Denmark, May 9, 2011

71. Theory uncertainties on cosmic rays propagation – Implications for dark matter searches
invited talk at *Dark Matter Underground and in the Heavens* (DMUH11), CERN July 25, 2011

72. Light neutralino dark matter
Topics in Astroparticle and Underground Physics (TAUP 2011), Munich (Germany), September 6, 2011

73. Particles in astrophysics and cosmology: a dark connection
invited talk at the *XCVII Congresso Nazionale della Societa di Fisica Italiana (SIF)*, L'Aquila (Italy), September 27, 2011

74. Dark matter: status of direct searches
invited talk at the *Dark Workshop @ GGI*, Firenze (Italy), October 26, 2011

75. Impact of CMS and ATLAS results to SUSY
invited talk at the the*Dark Universe*, first meeting of the Helmoltz–Allianz on Astroparticle Physics, KIT Karlsruhe (Germany), January 26, 2012

76. Particles in the sky: new directions in the search for dark matter signals
invited talk at *Planck 2012: from the Planck Scale to the Electroweak Scale*, Warsaw (Poland), May 28 – June 1, 2012

77. When particle physics meets the dark universe: current status of dark matter candidates
invited talk at the VIII International Workshop on the *Dark Side of the Universe* (DSU 2012), Búzios, Rio de Janeiro (Brasil), June 11, 2012

78. Review of dark matter direct detection and its interplay with indirect signals and LHC searches
invited talk at the XIII *Marcel Grossmann Meeting on Recent Developments in Theoretical and Experimental General Relativity, Gravitation, and Relativistic Field Theory* (MG13), Stockholm, Sweden, July 1–7, 2012

79. Dark matter direct detection
invited talk at thw *VII International Conference on Interconnections between Particle Physics and Cosmology (PPC2013)*, Deadwood (SK, USA), July 9, 2013

80. Multiwavelength and multimesseger signals of dark matter
invited plenary talk at the *16h Lomonosov Conference on Elementary Particle Physics*, Moscow (Russia), August 24, 2013

81. Dark Matter Review
invited plenary talk at the *Belgian Meeting on Fundamental Interactions*, UCL, Louvain-la-Neuve, December 12, 2013

82. Report of the Dark Matter Working Group
on behalf of the WG Conveners, at *INFN What Next* General Assembly, Roma (Italy), April 7, 2014

83. Multichannel searches for dark matter
invited talk at the Mini–Workshop on Astroparticle Physics at TeV and Beyond, Pisa (Italy), May 5, 2014

84. Dark matter searches with cosmic antideuterons
invited talk at the First *Cosmic ray antideuteron workshop (Antideuterons 2014)*, UCLA (LA, USA), June 5, 2014

85. Dark matter searches with cosmic antihelium
invited talk at First *Cosmic ray antideuteron workshop (Antideuterons 2014)*, UCLA (LA, USA), June 5, 2014

86. Particle dark matter searches in the anisotropic sky
at *High Energy Messengers: Connecting the Non-Thermal Extragalactic Backgrounds*, University of Chicago and Kavli Institute for Cosmological Physics, (Chicago, USA), June 10, 2014

87. New directions for the multi-wavelength and multimessenger signals of dark matter
invited plenary talk at the *20th International Symposium on Particles, Strings and Cosmology (PASCOS 2014)*, Warsaw (Poland), June 26, 2014

88. Astrophysical interpretation of AMS-02 leptonic data
invited plenary talk at the *Neutrino Oscillation Workshop (NOW 2014)*, Conca Specchiulla (Otranto, Lecce, Italy), September 8, 2014

89. Shedding light to the darkness: status of particle dark matter signals
invited plenary talk at the *XXI Conferenza SIGRAV Relatività Generale e Fisica della Gravitazione*, Alessandria (Italy), September 18, 2014

90. Particle dark matter searches through cross correlations and anisotropies
invited plenary talk at the International Workshop *Exploring the Dark Sector*, Seoul (South Korea), March 19, 2015

91. Report of the Dark Matter Working Group
on behalf of the WG Conveners, at *INFN What Next* General Assembly, Roma (Italy), April 1, 2015

92. "Other" Indirect Detection
invited plenary talk at the International Workshop on the *Identification of Dark Matter with a Cross-Disciplinary Approach*, Madrid (Spain), May 12, 2015

93. Particle dark matter signals in the anisotropic sky: a cross-correlation approach
invited plenary talk at the International Workshop on *Neutrinos and Dark Matter in Nuclear Physics 2015*, Jyväskylä (Finland), June 4, 2015

94. Particle dark matter signals: a multimessenger endeavour
invited plenary talk at *What Next: Onde Gravitazionali, Incontro TEONGRAV – Virgo*, Cascina (Pisa, Italy), October 16, 2015

95. Dark matter searches through anisotropies and cross-correlations
invited plenary talk at *IBS-MultiDark Joint Workshop on Dark Matter and XIII MultiDark Consolider Workshop*, IFT-UAM/CSIC Madrid (Spain), November 24, 2015

96. Dark matter: status and perspectives
invited plenary talk at the INFN General Assembly *Giornate di Studio sul Piano Triennale INFN 2016-2018*, Catania (Italy), December 3, 2015

97. Status of the WIMP "miracle"
invited plenary talk at *Challenges in the Dark Sector: Alternatives to the WIMP paradigm*, Laboratori Nazionali di Frascati (Italy), December 16, 2015

98. Looking to dark matter through gamma rays anisotropies
invited plenary talk at *2nd Anisotropic Universe Workshop ?Unveiling the Anisotropic Universe?*, Amsterdam (The Netherlands), April 12, 2016

99. Particle dark matter signals in the anisotropic sky: a cross-correlation approach
invited plenary talk at *Theoretical Cosmology in the Era of Large Surveys*, GGI Florence (Italy), May 6, 2016

100. Particle dark matter signals: a multimessenger endeavour
invited plenary talk at *From the Planck Scale to the Electroweak Scale (PLANCK 2016)*, Valencia (Spain), May 27, 2016

101. Direct dark matter search: status and perspectives
invited plenary talk at the 12th International Workshop on the *Dark Side of the Universe*, Bergen (Norway), July 25, 2016

102. Multimessenger astrophysics (with a take on dark matter)
invited plenary talk at *Neutrino Oscillation Workshop (NOW 2016*, Otranto (Italy), September 7, 2016

103. Dark matter overview
invited plenary talk at *XXV European Cosmic Ray Symposium (ECRS 2016*, Torino (Italy), September 9, 2016

104. Particle dark matter signals: a multimessenger endeavour
invited talk at the *102° National Congress of the Italian Physics Society (SIF 2016)*, Padova (Italy), September 28, 2016

105. Status of the search of dark matter as an elementary particle
invited talk at the *XIX Roma 3 Topical Seminar on Subnuclear Physics Gravitational Waves and Cosmology*, Roma (Italy), December 5, 2016

106. The role of cross sections in the indirect detection of dark matter
invited talk at the workshop *XSCRC2017: Cross sections for Cosmic Rays @ CERN*, CERN, March 29, 2017

107. Looking at dark matter through gamma-ray anisotropies
invited talk at the workshop *Dark Matter Signatures*, Odense (Denmark), June 12, 2017

108. The diffuse galactic and extragalactic radio emission
invited talk at the workshop *Radio Synchrotron Background Conference*, Richmond (VA, USA), July 20, 2017

109. Astrophysical signals of dark matter
invited talk at the workshop *Galileo Galilei Institute Conference: Collider Physics and the Cosmos*, Firenze (Italy), October 9-13, 2017

SEMINARS

1. Inflationary models
   University of Torino, Torino (Italy), June 14, 1993
2. Dark matter: neutralino relic abundance and detection rates
   PhD defense, University of Torino (Italy), January 12, 1995
3. Relic abundance and detection rates for neutralino dark matter
   Johns Hopkins University, Baltimore (USA), April 21, 1995
4. Neutralino dark matter in supersymmetric models with non–universal scalar mass terms
   Johns Hopkins University, Baltimore (USA), November 8, 1995
5. Supersymmetric Dark Matter
   Technische Universitaet, Muenchen (Germany), January 29, 1998
6. Combining information from direct and indirect searches for WIMPs
   Scuola Normale Superiore (Pisa), Italy, April 6, 2000
7. Non-baryonic dark matter in Supersymmetry
   Korean Institute for Advanced Study (KIAS), Seoul (South Korea), October 17, 2002
8. Looking into the dark: gamma rays and antimatter as probes of dark matter
   Department of Physics and Astronomy, The Johns Hopkins University, Baltimore (MD, USA), December 16, 2003
9. Signals of dark matter in space: gamma-rays and antimatter
   University of Trieste (Italy), April 20, 2004.
10. Light relic neutralinos in gaugino non–universal supersymmetry: cosmology and detection rates
    Department of Physics, University of Stockholm (Sweden), June 10, 2004
11. Particle dark matter: searching for new physics without accelerators
    Scuola Internazionale Superiore di Studi Avanzati (SISSA), Trieste (Italy), April 6, 2005
12. Neutralino dark matter and its signatures
    Galileo Galilei Institute for Theoretical Physics, Arcetri (Italy), September 12, 2006
13. Supersymmetry in particle physics and cosmology
    Istituto Nazionale di Ricerca Metrologica (INRIM), Torino (Italy), October 18, 2007
14. Particle dark matter: advances in the theoretical predictions of detection rates
    Gentner Colloquium for Astroparticle Physics, Max-Planck-Institut fr Kernphysik, Heidelberg (Germany), April 16, 2008
15. Advances in the theoretical predictions of indirect signals of dark matter
    Joint seminar Scuola Normale Superiore/Dipartimento di Fisica, Pisa (Italy), May 8, 2008
16. Indirect searches for dark matter: advances in the theoretical predictions of detection rates
    Joint APC Colloqium and IDAPP Lecture, Astroparticule et Cosmologie (APC), Universitè Paris 7, Paris (France), June 10, 2008

17. Particle dark matter: advancement in the theoretical predicitons of detection rates
Université Libre de Brussels (Belgium), May 8, 2009

18. Advances in the theoretical exploration of particle dark matter signals
Institute de Physique Théorique – CEA, Saclay (France), May 6, 2009

19. Neutrinos ad dark matter messengers
Laboratori Nazionali del Sud, Catania (Italy), June 14, 2010

20. Particles in astrophysics and cosmology: a dark connection
Laboratori Nazionali del Sud, Catania (Italy), June 16, 2010

21. Particles in astrophysics and cosmology: a dark connection
School of Physics and Astronomy, University of Southampton (UK), June 11, 2010

22. Particles in astrophysics and cosmology: a dark connection
Latest News from the Universe, Astronomical Observatory of Torino (OATO), Torino (Italy), February 21, 2011

23. Light neutralinos as dark matter
Institut fuer Theoretische Teilchenphysik und Kosmologie RWTH, Aachen (Germany), June 9, 2011

24. Particles in astrophysics and cosmology: a dark connection
Theory Colloquium, Department of Theoretical Physics, University of Torino (Italy), November 18, 2011

25. Radio signals from galactic and extragalactic dark matter
Center for Theoretical Underground Physics and Related Areas (CETUP*), Deadwood (SK, USA), July 16, 2012

26. A novel approach to the WIMP quest: cross-correlation of gamma-rays anisotropies and cosmic shear
Center for Theoretical Underground Physics and Related Areas (CETUP*), Deadwood (SK, USA), July 5, 2013

27. Radio signals from galactic and extragalactic dark matter
Theory Colloqium, DESY (Hamburg, Germany), May 8, 2013

28. Radio signals from galactic and extragalactic dark matter
Technische Universitaet, Muenchen (Germany), June 6, 2013

29. Dark Matter Searches with Cosmic Antideuterons
"La Trobada" at IFIC, Valencia (Spain), December 4, 2013

30. Dark matter searches with cosmic antideuterons
Institute for Theoretical Physics and Astronomy, University of Wurzburg (Germany), January 16, 2014

31. The anisotropic dark matter Universe
Institut d'Astrophysique de Paris (IAP), Paris (France), May 12, 2014

32. Cross-correlation between gravitational and non-gravitational probes of particle dark matter
INFN Commissione Scientifica Nazionale 2 (Astroparticle Physics), Laboratori Nazionali di Frascati (Italy), November 24, 2014

33. Particle dark matter searches in the anisotropic sky
GRAPPA, University of Amsterdam (The Netherlands), December 8, 2014

34. Particle dark matter searches through anisotropies and cross-correlations
University of Warsaw (Poland), April 27, 2015

35. Particle dark matter
University of Pavia (Italy), June 11, 2015

36. Indirect dark matter searches with cosmic antideuterons
INFN Commissione Scientifica Nazionale 2 (Astroparticle Physics), Rome (Italy), February 8, 2016

37. Particle dark matter: a multimessenger endeavour
University of Genova (Italy), May 18, 2016

38. Looking to dark matter through gamma-ray anisotropies
University of Pisa (Italy), April 27, 2017

39. Looking to dark matter through gamma-ray anisotropies
University of Oslo (Norway), May 31, 2017

40. Indirect dark matter searches with cosmic antideuterons
University of Roma Tor Vergata (Italy), June 7, 2017

LECTURES

1. Relic particles: cosmological abundance and detection rates
   series of lectures [4 hours]: Johns Hopkins University, Baltimore, MD, USA, February 1996
2. How supersymmetry meets dark matter?
   lecture at the "Educational TEMPUS Workshop on Supersymmetry", Warsaw University, Warsaw, Poland, May 23, 1998
3. Present status of Cosmology
   lecture at the Mia Schelke's Ph.D. defense as *faculty opponent*, Department of Physics, University of Stockholm, June 11, 2004
4. Physics at neutrino telescopes I
   series of lectures [6 hours] at the "ECT* DOCTORAL TRAINING PROGRAMME 2004: Neutrino Physics", Marie Curie Training site, European Center for Theoretical Studies in Nuclear Physics and Related Areas (ECT*), Trento, Italy, September 1–3, 2004
5. Lectures on Particle Dark Matter
   series of lectures [10 hours] at the PhD School of the Physics Department, Federico II University, Napoli, Italy, February 28–March 4, 2005
6. Elementary Particle Physics
   series of lectures [6 hours] at the "International School on Astroparticle Physics (ISAPP 2005) on "High energy cosmic rays", Villa Carlotta, Belgirate (VB), Italy, July 1–9, 2005
7. Lectures on supersymmetric dark matter
   series of lectures [4 hours] at the PhD School of the Physics Department, University of Roma Tor Vergata, Rome, Italy, March 12–13, 2009
8. Astroparticles in space: a theorist point of view
   IDAPP Lecture, Varenna, Italy, June 19, 2009
9. Lectures on supersymmetry and supersymmetric dark matter
   series of lectures [4 hours] at the Department of Physics, University of Trento, Italy, June 22–23, 2010
10. Dark matter: direct detection
    lecture at the "IV UniverseNet School – Frontiers of Particle Cosmology", Università del Salento, Lecce, Italy, September 14, 2010
11. Lectures on the theory of particle dark matter
    lectures [2 hours] at the "IV International Pontecorvo Neutrino Physics School", Alushta, Crimea, Ukraine, September 30, 2010
12. Astrophysical and particle physics aspects of dark matter searches
    IDAPP Lecture, APC, Paris (France), June 20, 2011
13. Particle Dark Matter
    series of lectures [15 hours] for the Km3NET group at INFN – Laboratori Nazionali del Sud, Catania (Italy), September 23–27, 2013
14. Particle Dark Matter
    lectures [3 hours] for the PhD Program at the University of Pavia, Pavia (Italy), May 26, 2014
15. How Dark is Dark? How to unveil the hidden nature of dark matter
    lecture [1 hour] at the *XIV Seminar on Software for Nuclear, Subnuclear and Applied Physics*, Alghero (Italy), June 4-9, 2017

16. How Dark is Dark? How to unveil the hidden nature of dark matter
    lectures [2 hours] at the *Varenna SIF School on Gravitational Waves and Cosmology*, Varenna (Italy), July 3-12, 2017

17. How Dark is Dark? How to unveil the hidden nature of dark matter
    lecture [1 hour] *VII International Pontecorvo Neutrino Physics School*, Prague (Czech Republic), August 20-September 1, 2017

PUBLIC ENGAGEMENT

Public Seminars

1. Public seminar: Cosmology: study and observation of the properties of the Universe
   Chieri (TO), Italy, 22 April 2004

2. Seminar to high–school students: Astroparticle physics
   at the *European Masterclass on Elementary Particle Physics*, University of Torino, 18 and 20 March 2006

3. Seminar to high–school students: Astroparticle physics and cosmology
   at the *European Masterclass on Elementary Particle Physics*, University of Torino, 20 March 2007

4. Public seminar: Cosmology from Copernicus to Newton
   for the program *Epistemology and Science*, Liceo Marie Curie, Grugliasco (TO), Italy, 7 February 2008

5. Seminar to high–school students: The theory of Relativity
   at Liceo Amedeo Avogadro, Torino, Italy, 5 June 2008

6. Public speech at the ceremony for the "E.R. Caianiello" Prize 2009:
   Investigation on the dark components of the Universe
   at the Faculy of Sciences of the University of Salerno, Italy, 27 March 2009

7. Seminar to high–school students:
   Investigation on the dark components of the Universe
   for the outreach program *Open Doors at the University (Università a Porte Aperte)*, University of Torino, 1 April 2009.

8. Public seminar:
   A formidable task: to search for elementary particles as constituents of dark matter
   in the session "The Cosmos: A journey through its bright and dark constituents" of the "Euroscience Open Forum (ESOF 2010)", Torino, July 5, 2010

9. Public seminar:
   Investigation on the dark components of the Universe
   at the "European Researcher's Night", Piazza Castello, Torino, September 23, 2011

10. Seminar to high–school students:
    Dark matter: where particle physics meets astrophysics and cosmology
    for the outreach program of the University of Torino ("Scuola di Fisica"), Aula Magna of the Rectorate, 29 January 2013

11. Public seminar:
    A voyage through the darkest sky
    at "Now.New", organized by Circolo dei Lettori, Torino, May 17, 2014

12. Seminar to high–school students:
    Dark matter: where particle physics meets astrophysics and cosmology
    at Liceo Scientifico Palli, Casale Monferrato, 13 December 2014

13. Seminar to high–school students:
    The Universe as a particle physics laboratory
    for the outreach program of the University of Torino ("Scuola di Fisica"), Aula Magna of the Rectorate, 31 March 2015

14. Public seminar:
    The secrets of dark matter: from the infinitely large to the infinitesimally small
    for the series "Lunedi dell'Università", Associazione Amici dell'Università di Torino, Aula Magna of the Rectorate, 13 April 2015 (with F. Donato, moderated by scientific journalist P. Bianucci)

15. Seminar to high–school students:
    The misteries of the Universe
    at the Ettore Fico Museum (Torino), in occasion of the exhibition *The Messengers of Gravity* by visual artist Luca Pozzi (in collaboration with INFN, CERN and Museo Ettore Fico), 22 January 2016

16. Round table on:
    Dialogues between Science and Art
    at the Ettore Fico Museum (Torino), in occasion of the exhibition *The Messengers of Gravity* by visual artist Luca Pozzi (in collaboration with INFN, CERN and Museo Ettore Fico), 5 February 2016 (with T. Camporesi, A. Staiano, M. Hoch, L. Pozzi, moderated by scientific journalist V. Guarnieri)

17. Seminar to high–school students:
    The theory of General Relativity: 100 years of successes
    at Liceo Scientifico Palli, Casale Monferrato, 19 March 2016

18. Seminar to high–school students:
    Voyage in the Universe
    for the outreach program of the University of Torino ("Scuola di Fisica"), Aula Magna of the Rectorate, Cavallerizza Reale, 21 March 2016

19. Seminar to high–school students:
    The theory of General Relativity: 100 years of successes
    at Liceo Scientifico Cocito, Alba, 20 April 2016

20. Seminar to University and PhD students:
    Voyage in the Universe
    at the *2nd Conference of the Italian Physics Students Association (AISF)* Aula Magna of the Rectorate, Cavallerizza Reale, Torino 22 April 2016

21. Public seminar and round table on:
    The wave of the century: the search of gravitational waves
    Aula Magna del Politecnico of Torino, 10 May 2016 (with E. Coccia and A. Tartaglia, moderated by F. Porcelli)

22. Public outreach event on:
    The discovery of gravitational waves
    at the "European Researcher's Night", Piazza Castello, Torino, 30 September 2016

23. Public seminar on:
    Astroparticle Physics: new frontiers at the interface of particle physics, astrophysics and cosmology
    Accademia delle Scienze di Torino, 11 January 2017

24. Public seminar on:
    Gravitational waves, astronomy and black holes
    Aosta, 13 February 2017 (with. F. Ferroni and A. Nagar)

25. Public seminar on:
    The secret of dark matter
    Aula Magna of the Rectorate, Cavallerizza Reale, Torino, 7 March 2017

26. Seminar to high-school students:
    THE NEW FRONTIER IN ASTROPARTICLE PHYSICS
    Liceo Copernico, Torino, 6 May 2017

27. Seminar to high-school students:
    THE ELASTIC TIME
    TTT – Time Travel in Turin, Liceo Umberto I, Torino, 15 and 16 May 2017

28. Public seminar:
    DARK MATTER: FROM THE BIG BANG TO THE LARGE HADRON COLLINDER
    Planetarium Infini.To, Pino Torinese, 30 September 2017 (with M. Del Mastro, moderated by A. Ferrari, in occasion of the celebrations for the 10th anniversary of Planetarium Infini.To)

29. Public seminar:
    VOYAGE IN THE OBSCURE UNIVERSE
    Sala Dugentesca, Vercelli, 5 October 2017 (moderated by A. Ferrari, in occasion of the celebrations for the 10th anniversary of Planetarium Infini.To)

Articles

1. Materia oscura: storia di un enigma
   article on the scientific magazine *Le Stelle*, n. 118, May 2013 (Gruppo B Editore)
2. Sempre più vicini ala materia oscura
   article on the scientific magazine *Le Stelle*, n. 153, April 2016 (Gruppo B Editore)
3. Astrofisica. Abbiamo stanato 20.000 sorgenti gamma
   article on the scientific magazine *Le Stelle*, n. 159, October 2016 (Gruppo B Editore)
4. Materia oscura alternativa ai WIMP
   article on the scientific magazine *Asimmetrie*, n. 20, October 2016 (INFN)
5. Segnali di materia oscura nel cielo gamma?
   Web article on *FRIDA: Forum della Ricerca*, University of Torino, November 2015
6. Svelate 20000 nuove sorgenti di raggi gamma nel cielo
   Web article on *FRIDA: Forum della Ricerca*, University of Torino, September 2016
7. Collaborator of the on–line journal Ulisse edited by SISSA (Scuola Internazionale Superiore di Studi Avanzati) February 2004, December 2004, October 2005

Other Public Engagement Activities

1. Member of the Jury of the *National Prize for Science Popularization* (*Premio Nazionale di Divulgazione Scientifica*), awarded by the Italian Book Association (Associazione Italiana del Libro) [2014, 2015, 2016, 2017]
2. Member of the Jury of the *Premio Giovedì Scienza 2017*, prize awarded by the Centro Scienza Onlus Torino to young scientists and researchers of age under 35 who work in an Italian research institution
3. Interviews for INFN Communication Office: June 2015, September 2015
4. Interviews for INAF Media Center: March 2015, May 2015
5. Interviews for: New Scientist, ANSA (leading Italian news agency), Italian National Television News (RAI TG3), Radio 110 (UniTO), La Repubblica (major Italian newspaper), OggiScienza (scientific magazine)
6. Organization (with L. Latronico) of *Blazing Quasi-Stellar Object*, CERN Auditorium, March 29, 2017, performance by visual artist Luca Pozzi curated by Francesco Urbano Ragazzi, in occasion of the Fermi Large Area Telescope Meeting

RESEARCH ACTIVITY AND SCIENTIFIC INTERESTS

My main research activities and scientific interests are in the domain of Astroparticle Physics, and refer to the study of particle dark matter and its detection signals, particle cosmology, particle astrophysics and neutrino physics.

Brief summary of performed studies

- **Dark Matter**

  Phenomenological analysis of supersymmetric particles that can play the role of dark matter in the Universe. The elements of this area of research can be outlined as:

  Supersymmetric models and extensions of the Standard Model. Study of dark matter candidates, most notably the neutralino and sneutrino, within different supersymmetric extensions of the Standard Model of fundamental interactions, from supergravity to effective theories.

  Relic abundance of neutralinos. Detailed and comprehensive study of the neutralino relic abundance, within different supersymmetric models and supergravity, including the connnection with the impact that the relic abundance calculation may have on the determination of bounds to the supersymmetric models. This analysis has relevance for the studies of new physics at accelerators, like previously LEP and Tevatron, and now LHC.

  Direct searches of dark matter. Cold dark matter can be searched for by means of low–background detectors, through the elastic and inelastic scattering of dark matter on the nuclei of low–background detectors. Detailed studies of the direct detection signal, and of its main signature offered by the annual modulation, have been performed for neutralino and sneutrino dark matter. Predictions and interpretations for all the experimental efforts (DAMA, CDMS, XENON and others) have been studied.

  Indirect dark matter searches: neutrino fluxes from the Earth and the Sun. Dark matter gravitationally captured inside the Earth and the Sun can annihilate and produce a neutrino flux. Detailed calculation of the capture process and of the neutrino production, propagation and detection have been performed for neutralino and sneutrino dark matter. Comparisons with the capabilities of neutrino telescopes has been one of the major topic of this type of research. Recently we have proposed a novel, potentially interesting signal: tau neutrinos arriving from the Sun in the downgoing direction. This class of signature is unavoidable from dark matter annihilation in the Sun interior, and being in the downgoing direction it is basically background free, since the intrinsic tau component in atmospheric neutrinos is negligible and on the baseline of the atmospheric thickness neutrino oscillations do not have time to operate. We have shown that the main source of background actually comes from misidentification of electron and muon neutrinos in the detector.

  Indirect dark matter searches: antiprotons, positrons and gamma–rays. If the dark matter annihilation process occurs in the galactic halo, antiprotons, positrons and gamma–rays may represent a signal for the presence of dark matter. We have performed one of the most advance and detailed analysis of the antiproton and positrons fluxes from dark matter annihilation in the Galaxy, including the detailed determination of the astrophysical background from cosmic rays interactions. We have determined the astrophysical uncertainties on both the signals and the background, and we have analyzed the relevant results from PAMELA and FERMI satellites for searches of both astrophysical sources and dark matter.

  The gamma-ray signal has been studied, especially in connection with the capabilities of the FERMI satellite.

  Indirect dark matter searches: antideuterium and antihelium. We have been the first to propose the search of antideuterium in space as a signal from dark matter annihilation. We have realized predictions for

this signal in many supersymmetric models and we have shown that antideuterium will represent the most important dark matter discovery tool, when the experimental sensitivities will reach the required level. This is expected in the near future, both from AMS and from the GAPS satellite. The latter is a project submitted to NASA right as a consequence of our proposal on the antideuteron signal. More recently we have investigated antihelium, by deriving the size of the expected signal: we have shown that low-energy antiheliums are potentially as good as antideuterons, but the required experimental sensitivities are not yet ready for the current generation of experiments.

Indirect dark matter searches: radio signal. Recently we have studied the radio signal originating from synchrotron emission from relativistic electrons produced by dark matter annihilation. We have studied both the galactic and extragalactic emission. We have also proposed an interpretation of the radio excess measured by ARCADE in terms of a dark matter signal. We have also studied the possibility to investigate the angular power spectrum of the extragalactic radio emission, which offers an interesting additional tool, due to the exceptional angular resolution of radio telescopes. Radio may represent a relevant window of opportunity for the search of a dark matter non-gravitational signal, due to the large experimental effort which is under development and that will lead to the operation of SKA.

Indirect dark matter searches: cross-correlations and anisotropies. Recently we have proposed a novel signal to investigare particle dark matter: the cross-correlation of cosmic-shear with anisotropies in the gamma-rays emission from dark matter annihilation or decay, occurring in the same structures that determine the weak-lensing observables. The cross-correlation is studied in terms of its angular power spectrum, and we have shown that it has the capability to allow discrimination of a dark matter emission from astrophysical gamma-rays sources. The cross-correlation technique has then been extended to comprise all the multi-wavelength emission of a dark matter signal (from radio to gamma-rays), and additional gravitational observables (in addition to cosmic shear: large-scale-structure matter distribution, lensing of the cosmic microwave background).

- **Dark Energy and Cosmological Models**

  We have studied non–standard cosmological models arising in extensions of the theory of gravity, specifically in scalar–tensor theories. We have determined the effect of this modified cosmologies on the formation of dark matter in the early Universe, and we have derived bounds on the expansion history of the Universe prior to BBN by means of dark matter searches, under the hypothesis that dark matter is a cold thermal relic. In setting the bounds, we have employed all the multimessenger and multiwavelength studies of dark matter searches. We have also investigated coupling between dark matter and dark energy and how this could solve the tension in the local and cosmological determinations of the Hubble constant and the amplitude of mass fluctuations.

- **Neutrino Physics**

  Studies on the cosmology of neutrinos and on the phenomenology of neutrino oscillation, both for the study of atmospheric neutrinos and for the study of the neutrino signal from dark matter annihilation, have been performed. We have also studied the impact on the solar interior and the ensuing effect on the solar neutrino fluxes, arising from the presence in the Sun of a population of dark matter captured by gravitational accretion.

  More recently we have studied the bounds that can be derived on sterile neutrinos when long-baseline oscillation data are combined with cosmological observations (cosmic microwave background radiation and large scale structure) and we have explored models of neutrino masses in the context of dark matter and leptogenesis.

Main achievements in research activity

- **Original proposal** (2000) of a novel channel to search for galactic dark matter: **antideuterons**. AMS-02 has now antideuterons among its physics goals for dark matter searches, and a dedicated space

experiment (GAPS) has been proposed to NASA on the basis of our original paper. NASA approved GAPS in 2016, and the first science flight is expected in 2020. Antideuterons are now well recognized to represent a crucial channel for dark matter discovery.

- **Original proposal** (2013) of a novel channel to search for extragalactic dark matter: the **cross–correlation of gamma-ray emission with weak lensing observables, specifically the cosmic-shear**. The idea is to correlate information on where dark matter is in the Universe (through gravitational lensing observables) and information of the particle-physics nature of dark matter (the emission of gamma-rays). It has been shown that the cosmic shear observable, bringing tomographic information on the redshift distribution of dark matter, acts as a filter to separate the dark matter gamma-rays emission from gamma-rays astrophysical sources. The proposal has then been extended to comprise a full set of observables from the gravitational side and the whole multi-wavelength range for particle dark matter signals. Cross-correlation of gamma-rays and gravitational observables start now to be investigated experimentally, and the prospects of the proposal are for the future weak lensing mission (Dark Energy Survey, Euclid) together with current and future gamma-rays detectors (Fermi, CTA).
- **Identification** of the previously-reported and astrophysically-unaccountable ARCADE radio excess as a possible dark matter signal (2011), with the explanation of the reasons that make the dark matter interpretation viable.
- **First proposal** (1999) and **first complete study** with development of the relevant formalism (2005) of the effect of neutrino oscillations on the neutrino signal produced by dark matter annihilation in the Earth and Sun. This effect is now routinely included in dark matter predictions for the Earth/Sun neutrino signal.
- **First investigation** (2003) and subsequent detailed analyses of *light* neutralino dark matter in gaugino non-universal supersymmetric models. These light neutralinos were proposed as relevant to explain the results of direct detection experiments. These studies brought attention to the light-WIMP sector and were then followed by a large number of studies by different authors.
- **First analyses** where astrophysical uncertainties on the antiproton (2004), positron (2008) and antideuteron (2008) signal predictions were quantified and shown to be sizable. These papers introduced a formalism that is now commonly used in the literature.
- **First studies** on the impact of alternative theories of gravity on particle dark matter searches, as a consequence of the altered thermal decoupling of WIMPs in the early Universe (2004, 2008).
- **First studies** on the possibility to use dark matter astrophysical signals to bound non-standard evolution histories of the early universe well before Big Bang Nucleosynthesis (2006, 2009).
- **Among the first authors** to study the impact of galactic halo modelling (1998) on the direct detection signal of dark matter and on its signature represented by the annual modulation effect (2000).
- **Among the first authors** to discuss neutralino dark matter phenomenology in supergravity (1996), to investigate non-universalities (1996) and to inspect low-energy effective supersymmetric frameworks (since 1991), topics that are now a standard field of research.
- **Identification** of a theoretical mechanism (1996) in minimal supergravity models, that then became known as "focus point" in the literature.
- **Pioneer** in the development of full numerical codes (since 1991) for astrophysical DM signals and in the realization of full analyses of particle DM in supersymmetry. The "Torino Code" has been one of the first numerical codes to cover all dark matter astrophysical signals and to perform complete calculation of neutralino relic abundance and signals in minimal supergravity, non-universal supergravity and low-energy supersymmetry. These calculations have been instrumental in the DM studies of a large set of experimental results from neutrino telescopes, cosmic rays detectors in space and low-background detectors in underground laboratories.

Current activities and projects

My current most relevant research interest is addressed to a large project on the study of the extragalactic dark matter emission of electromagnetic signals (radio, X-rays, gamma-rays) and dark matter observables of gravitational origin (weak lensing, redshift distribution of matter), with the aim at performing a full and comprehensive study of the most advanced capabilities of extracting a true signal which would demonstrate that dark matter (up to know only seen in the gravitational channel) is indeed a new, yet undiscovered, elementary particle, able to emit a signal of particle-physics origin. The project builds on the recent analyses we performed on the gamma-rays and radio emission from one side, and on the proposal of cross-correlation of the anisotropic emission of these signals with cosmic-shear (and among themselves, too). The interest is to develop the theoretical modeling and formalism form one side, and to analyze astrophysical and cosmological data on the other side, an endeavor that we have already started with direct analysis of the Fermi-LAT data and of the currently available radio maps, and we are right now pursuing with the further inclusion of the CMB lensing. It is now clear that dark matter signals are extremely feeble and well hidden in complex and overwhelming backgrounds: a clear identification of the particle physics nature of dark matter will definitely only come from a detailed and complex analysis of fine details of the multi-wavelength and multi-messenger emission, and we are starting to develop new methods and techniques for this endeavor. Astrophysical and cosmological probes are providing an incredible amount of information, with an unprecedented massive amount of data at any wavelength and for any type of messenger and observable. This will be even more the case in the next 5 to 10 to 20 years, with many missions, whose list is too long to be put here. All this amount of information is a unique opportunity not only for astrophysics *per se*, but can be proficiently exploited also for particle physics through the dark matter signals: a unique opportunity which should not be missed.

Along with the cross-correlation studies, relevant for the investigation of *extragalactic* dark matter, the second aspect of my research interests stands on the *galactic* dark matter signals: the "golden channel" of antideuterons will be put under scrutiny in the next 5-10 years, and we will start facing the problem of realizing improved theoretical predictions of the expected rates, since theoretical uncertainties are currently large. A reduction of these uncertainties will definitely be possibile thanks to the new data coming from AMS-02 and other cosmic-rays experiments: these data will have to be exploited to shape more deeply the prediction of the dark matter signals, including antideuterons. This will require the development of improved modeling of galactic transport of cosmic rays, tuned on the new data. A goal which is in my list of projects since some time, is a complete re-thinking of the theoretical and numerical tools for cosmic-rays transport, by employing more advanced techniques which could allow to go beyond the current approximations. Better data will likely require better theoretical modeling, although it is not clear at the moment how much better can be done and which is the best direction to choose: improve on semi-analytical modeling, which is faster than purely numerical approaches and allows investigation of a larger set of models; or instead advanced numerical techniques, like e.g. stochastic equation techniques, which are more powerful but also slower. With the unprecedented statistics that will be collected by AMS-02, theoretical improvements will be necessary for transport modeling, both in the Galaxy and in the heliosphere. This applies to all charged messengers of a dark matter signal: positrons, antiprotons, antideuterons and, if they will be experimentally accessible in the future, heavier antinuclei.

Another relevant point in the dark matter quest is that dark matter does not have to be a (relatively) heavy particle with (almost) weak-type interactions (the canonical WIMP). The presence of dark matter is inferred purely from gravity, and gravity does not tell us anything about the dark matter mass and interactions. At least to first order, since cosmic structure formation is sensitive to these dark matter properties. It will be therefore important (and it is actually also quite relevant now, especially considering that no information on New Physics is currently coming from particle accelerators) to investigate also other paradigms, different from WIMPs. A crucial place to look at is again the multi-wavelength sky, since dark matter might be a relatively light physical state, which therefore could emit a signal at frequencies much lower that gamma-rays (and some hints have also been recently reported, e.g. in the X-rays band, although deeper investigation is needed). The multi-wavelength studies discussed above

can (and should) therefore be directed also to alternative types of dark matter candidates (like heavy sterile neutrinos, or axion-like particles). This is another topic of current interest in my planned research activity.

Another place to look for a dark matter signal, both in the case of WIMP dark matter, but even more so for lighter states, is the cosmic microwave background radiation: the Planck satellite is currently providing the most refined observation of the CMB, but many other surveys are either currently under operation or will be launched and being operational in the next 5-10 yrs. The richness of the information encoded in the CMB, and the precision that has been reached on its measurement, will allow unprecedented deep tests of the impact of particle physics on cosmology. Most of the techniques relevant to study the CMB are common to the proposal of the cross-correlation studies discussed above (namely: two-point correlation functions and angular power spectra, or possibly higher order correlators) and we are in fact already investigating the information that can be derived from CMB on dark matter *in primis*, and for particle physics in general. The study of the CMB, and the information that can be derived from it on particle physics, is a third major topic of interest. This implies also the study of neutrino cosmology, both for standard neutrinos and for sterile neutrinos.

As a last grand-topic of interest, I mention the other side of the dark matter field: particle physics modeling and searches for New Physics at accelerators. While this has been my major topic of research in the past, in recent years I have devoted more effort to the identification of astrophysical signals of dark matter. The first observation of a non-gravitational signal in the astrophysical context will not be sensitive to the fine details of the underlying New Physics model which governs the dark matter particle. In a sense: first find a signal, than start understanding what can give this signal. The information that will come from astrophysics will be on the value (or better the order of magnitude) of the dark matter mass, and on the size of its interactions. This will not fix the underlying New Physics model, but will represent the start of a deeper investigation from the particle-physics side, to shape out the proper models able to reproduce these dark matter properties inferred from astrophysics. LHC will be leading the field for the next 20 yrs, and it will be the place to look for a signal that can be correlated to dark matter. From one side, we must be prepared, by developing the right theoretical tools and analyses pipelines, able to mix the information that hopefully will come from the astrophysical side together with a more specific particle-physics analysis of LHC searches. From the other side we need to progress in the development of the best techniques to perform LHC analysis with the eye focussed on the dark matter problem. There is a large worldwide endeavor in this direction, the techniques have now progressed to a level of large complexity. To mix the elaborate studies from the accelerator physics side to the complex investigation from the astrophysical side is definitely a major enterprise, which stays in the list my interests and foreseen projects.

TEACHING ACTIVITY

- **1995**
  - *General Physics for Biological Science Majors*
    Teaching Assistant, The Johns Hopkins University (Baltimore, USA), Fall 1995
  - *Geometrical and Physical Optics*
    Teaching Assistant, The Johns Hopkins University (Baltimore, USA), Fall 1995

- **1996**
  - *Advanced Quantum Mechanics*
    PhD in Physics, The Johns Hopkins University (Baltimore, USA), Spring 1996

- **Academic Year 1996–1997**
  - *Analytical Mechanics and Classical Electrodynamics* (Degree in Physics)
    Teaching Assistant, University of Torino, Italy

- **Academic Year 1997–1998**
  - *Analytical Mechanics and Classical Electrodynamics* (Degree in Physics)
    Teaching Assistant, University of Torino

- **Academic Year 1999–2000**
  - *Quantum Mechanics* (Degree in Physics)
    University of Torino
  - *Exams*: Quantum Mechanics (Degree in Physics), Theoretical Physcs (Degree in Physics)

- **Academic Year 2000–2001**
  - *Quantum Mechanics* (Degree in Physics)
    University of Torino
  - *Quantum Mechanics* (Degree in Materials Sciences)
    University of Torino
  - *Elements of Astroparticle and Cosmological Physics* (PhD in Physics)
    University of Torino
  - *Exams*: Quantum Mechanics (Degree in Physics and Degree in Materials Sciences), Theoretical Physcs (Degree in Physics), Elements of Astroparticle and Cosmological Physics (PhD in Physics)
  - *Graduation exams*: Degree in Physics

- **Academic Year 2001–2002**
  - *Theoretical Physics* (Degree in Physics)
    University of Torino
  - *Analytical and Statistical Mechanics* (Degree in Physics)
    University of Torino
  - *Quantum Mechanics* (Degree in Materials Sciences)
    University of Torino

- *Elements of Astroparticle and Cosmological Physics* (PhD in Physics)
  University of Torino
- *Exams*: Analytical and Statistical Mechanics (Degree in Physics), Fundaments of Theoretical Physics (Degree in Physics), Quantum Mechanics (Degree in Materials Sciences), Theoretical Physics (Degree in Physics), Elements of Astroparticle and Cosmological Physics (PhD in Physics)
- *Graduation exams*: Degree in Physics

- **Academic Year 2002–2003**
  - *Astroparticle and Cosmological Physics* (Master Degree in Physics of the Fundamental Interactions)
    University of Torino
  - *Phenomenology of Fundamental Interactions* (Master Degree in Physics of the Fundamental Interactions)
    University of Torino
  - *Cosmology* (Master Degree in Astrophysics and Cosmic Physics)
    University of Torino
  - *Analytical and Statistical Mechanics* (Degree in Physics) University of Torino
  - *Quantum Mechanics* (Degree in Materials Sciences) University of Torino
  - *Elements of Astroparticle and Cosmological Physics* (PhD in Physics) University of Torino
  - *Exams*: Analytical and Statistical Mechanics (Degree in Physics) Fundaments of Theoretical Physics (Degree in Physics), Quantum Mechanics (Degree in Materials Sciences), Theoretical Physics (Degree in Physics), Relativistic Quantum Mechanics (Degree in Physics), Phenomenology of Fundamental Interactions (Master Degree in Physics of the Fundamental Interactions), Astroparticle and Cosmological Physics (Master Degree in Physics of the Fundamental Interactions), Cosmology (Master Degree in Astrophysics and Cosmic Physics), Elements of Astroparticle and Cosmological Physics (PhD in Physics)

- **Academic Year 2003–2004**
  - *Astroparticle and Cosmological Physics* (Master Degree in Physics of the Fundamental Interactions)
    University of Torino
  - *Phenomenology of Fundamental Interactions* (Master Degree in Physics of the Fundamental Interactions)
    University of Torino
  - *Cosmology* (Master Degree in Astrophysics and Cosmic Physics)
    University of Torino
  - *Analytical and Statistical Mechanics* (Degree in Physics) University of Torino
  - *Elements of Astroparticle and Cosmological Physics* (PhD in Physics) University of Torino
  - *Exams*: Analytical and Statistical Mechanics (Degree in Physics) Fundaments of Theoretical Physics (Degree in Physics), Quantum Mechanics (Degree in Materials Sciences), Relativistic Quantum Mechanics (Degree in Physics), Phenomenology of Fundamental Interactions (Master Degree in Physics of the Fundamental Interactions), Astroparticle and Cosmological Physics (Master Degree in Physics of the Fundamental Interactions), Cosmology (Master Degree in Astrophysics and Cosmic Physics) Elements of Astroparticle and Cosmological Physics (PhD in Physics)
  - *PhD defence*: University of Stockholm (Sweden)

- **Academic Year 2004–2005**

- *Astroparticle and Cosmological Physics* (Master Degree in Physics of the Fundamental Interactions) University of Torino
- *Phenomenology of Fundamental Interactions* (Master Degree in Physics of the Fundamental Interactions)
  University of Torino
- *Cosmology* (Master Degree in Astrophysics and Cosmic Physics)
  University of Torino
- *Analytical and Statistical Mechanics* (Degree in Physics) University of Torino
- *Elements of Astroparticle and Cosmological Physics* (PhD in Physics) University of Torino
- *Exams*: Analytical and Statistical Mechanics (Degree in Physics) Relativistic Quantum Mechanics (Degree in Physics), Phenomenology of Fundamental Interactions (Master Degree in Physics of the Fundamental Interactions), Astroparticle and Cosmological Physics (Master Degree in Physics of the Fundamental Interactions), Cosmology (Master Degree in Astrophysics and Cosmic Physics), Elements of Astroparticle and Cosmological Physics (PhD in Physics)
- *Graduation exams*: Degree in Physics

- **Academic Year 2005–2006**
  - *Astroparticle and Cosmological Physics* (Master Degree in Physics of the Fundamental Interactions) University of Torino
  - *Phenomenology of Fundamental Interactions* (Master Degree in Physics of the Fundamental Interactions)
    University of Torino
  - *Analytical and Statistical Mechanics* (Degree in Physics) University of Torino
  - *Physics of the Early Universe* (PhD in Physics) University of Torino
  - *Exams*: Analytical and Statistical Mechanics (Degree in Physics) Relativistic Quantum Mechanics (Degree in Physics), Phenomenology of Fundamental Interactions (Master Degree in Physics of the Fundamental Interactions), Astroparticle and Cosmological Physics (Master Degree in Physics of the Fundamental Interactions), Cosmology (Master Degree in Astrophysics and Cosmic Physics), Physics of the Early Universe (PhD in Physics)
  - *Graduation exams*: Degree in Physics

- **Academic Year 2006–2007**
  - *Astroparticle and Cosmological Physics* (Master Degree in Physics of the Fundamental Interactions) University of Torino
  - *Analytical and Statistical Mechanics* (Degree in Physics) University of Torino
  - *Physics of the Early Universe* (PhD in Physics) University of Torino
  - *Lectures on Neutrino Physics* (PhD in Physics) University of Torino
  - *Exams*: Analytical and Statistical Mechanics (Degree in Physics) Relativistic Quantum Mechanics (Degree in Physics), Phenomenology of Fundamental Interactions (Master Degree in Physics of the Fundamental Interactions), Astroparticle and Cosmological Physics (Master Degree in Physics of the Fundamental Interactions), Cosmology (Master Degree in Astrophysics and Cosmic Physics), Physics of the Early Universe (PhD in Physics)
  - *Graduation exams*: Degree in Physics

- **Academic Year 2007–2008**
  - *Introduction to General Relativity* (Master Degree in Physics of the Fundamental Interactions) University of Torino
  - *Astroparticle and Cosmological Physics* (Master Degree in Physics of the Fundamental Interactions) University of Torino
  - *Physics of the Early Universe* (PhD in Physics) University of Torino
  - *Lectures on Neutrino Physics* (PhD in Physics) University of Torino
  - *Exams*: Introduction to General Relativity (Master Degree in Physics of the Fundamental Interactions) Astroparticle and Cosmological Physics (Master Degree in Physics of the Fundamental Interactions), Cosmology (Master Degree in Astrophysics and Cosmic Physics), Physics of the Early Universe (PhD in Physics)
  - *Graduation exams*: Degree in Physics
  - *PhD defence*: University of Torino
  - *PhD defence*: University of Perugia

- **Academic Year 2008–2009**
  - *Introduction to General Relativity* (Master Degree in Physics of the Fundamental Interactions) University of Torino
  - *Astroparticle and Cosmological Physics* (Master Degree in Physics of the Fundamental Interactions) University of Torino
  - *Physics of the Early Universe* (PhD in Physics) University of Torino
  - *Lectures on Neutrino Physics* (PhD in Physics) University of Torino
  - *Exams*: Introduction to General Relativity (Master Degree in Physics of the Fundamental Interactions) Astroparticle and Cosmological Physics (Master Degree in Physics of the Fundamental Interactions), Cosmology (Master Degree in Astrophysics and Cosmic Physics), Physics of the Early Universe (PhD in Physics)
  - *PhD defence*: University of Chambery (France)

- **Academic Year 2009–2010**
  - *General Relativity* (Master Degree in Physics of the Fundamental Interactions) University of Torino
  - *Astroparticle and Cosmological Physics* (Master Degree in Physics of the Fundamental Interactions) University of Torino
  - *Physics of the Early Universe* (PhD in Physics) University of Torino
  - *Lectures on Neutrino Physics* (PhD in Physics) University of Torino
  - *Exams*: Introduction to General Relativity (Master Degree in Physics of the Fundamental Interactions) Astroparticle and Cosmological Physics (Master Degree in Physics of the Fundamental Interactions), Cosmology (Master Degree in Astrophysics and Cosmic Physics), Physics of the Early Universe (PhD in Physics)
  - *Graduation exams*: Degree in Physics
  - *PhD defence*: University of Chambery (France)

- **Academic Year 2010–2011**

- *General Relativity* (Master Degree in Physics)
  University of Torino
- *Astroparticle and Cosmological Physics* (Master Degree in Physics)
  University of Torino
- *Classical Physics II with Laboratory* (Master Degree in Material Sciences)
  University of Torino
- *Physics of the Early Universe* (PhD in Physics) University of Torino
- *Lectures on Neutrino Physics* (PhD in Physics) University of Torino
- *Exams*: General Relativity (Master Degree in Physics) Astroparticle and Cosmological Physics (Master Degree in Physics), Cosmology (Master Degree in Physics), Classical Physics II with Laboratory (Bachelor's Degree in Material Sciences), Physics of the Early Universe (PhD in Physics)
- *Graduation exams*: Degree in Physics
- *PhD defence*: University of Torino

- **Academic Year 2011–2012**
  - *General Relativity* (Master Degree in Physics)
    University of Torino
  - *Astroparticle and Cosmological Physics* (Master Degree in Physics)
    University of Torino
  - *Exams*: General Relativity (Master Degree in Physics) Astroparticle and Cosmological Physics (Master Degree in Physics), Classical Physics II with Laboratory (Bachelor's Degree in Material Sciences),
  - *Graduation exams*: Degree in Physics
  - *PhD defence*: University of Odense (Denmark)

- **Academic Year 2012–2013**
  - *General Relativity* (Master Degree in Physics)
    University of Torino
  - *Astroparticle and Cosmological Physics* (Master Degree in Physics)
    University of Torino
  - *Exams*: General Relativity (Master Degree in Physics) Astroparticle and Cosmological Physics (Master Degree in Physics), Quantum Mechanics (Bachelor 's Degree in Physics)
  - *Graduation exams*: Degree in Physics

- **Academic Year 2013–2014**
  - *General Relativity* (Master Degree in Physics)
    University of Torino
  - *Astroparticle and Cosmological Physics* (Master Degree in Physics)
    University of Torino
  - *Exams*: General Relativity (Master Degree in Physics) Astroparticle and Cosmological Physics (Master Degree in Physics), Quantum Mechanics (Bachelor's Degree in Physics)
  - *Graduation exams*: Degree in Physics

- **Academic Year 2014–2015**
  - *General Relativity* (Master Degree in Physics)
    University of Torino
  - *Astroparticle and Cosmological Physics* (Master Degree in Physics)
    University of Torino
  - *Astrophysical signals of particle dark matter* (PhD in Physics)
    University of Torino
  - *Exams*: General Relativity (Master Degree in Physics) Astroparticle and Cosmological Physics (Master Degree in Physics),
  - *Graduation exams*: Degree in Physics

- **Academic Year 2015–2016**
  - *General Relativity* (Master Degree in Physics)
    University of Torino
  - *Astroparticle and Cosmological Physics* (Master Degree in Physics)
    University of Torino
  - *Exams*: General Relativity (Master Degree in Physics) Astroparticle and Cosmological Physics (Master Degree in Physics),
  - *Graduation exams*: Degree in Physics

- **Academic Year 2016–2017**
  - *General Relativity* (Master Degree in Physics)
    University of Torino
  - *Astroparticle and Cosmological Physics* (Master Degree in Physics)
    University of Torino
  - *General Physics* (Master Degree in Risk Management for the Environment and Workplaces)
    University of Torino
  - *Particle dark matter* (PhD in Physics)
    University of Torino
  - *Exams*: General Relativity (Master Degree in Physics) Astroparticle and Cosmological Physics (Master Degree in Physics), General Physics (Master Degree in Risk Management for the Environment and Workplaces)
  - *Graduation exams*: Degree in Physics

- **Academic Year 2017–2018** (ongoing)
  - *General Relativity* (Master Degree in Physics)
    University of Torino
  - *Astroparticle and Cosmological Physics* (Master Degree in Physics)
    University of Torino
  - *General Physics* (Master Degree in Risk Management for the Environment and Workplaces)
    University of Torino
  - *Particle dark matter* (PhD in Physics)
    University of Torino

- *Exams*: General Relativity (Master Degree in Physics) Astroparticle and Cosmological Physics (Master Degree in Physics), General Physics (Master Degree in Risk Management for the Environment and Workplaces)
- *Graduation exams*: Degree in Physics

PhD Theses

- Chiara Arina (University of Torino, defense: 5.12.2007)
  Sneutrino dark matter: relic abundance and detection rates
  Opponent: Prof. C. Munoz, Universidad Autonoma de Madrid, Spain
- Roberto Lineros (University of Torino, defense: 12.12.2008)
  Study of positrons from cosmic ray interactions and cold dark matter annihilation in the galactic environment
  Opponents: Prof. J. Silk, Oxford University, England; Prof. G. Sigl, Hamburg University, Germany
  [**Fubini Prize** for the best PhD thesis in theoretical physics, INFN 2009]
- Timur Delahaye (Université de Savoye (France), co–tutor Prof. P. Salati, defense: 7.07.2010)
  Propagation of galactic cosmic rays and dark matter indirect detection
  Opponents: Prof. C. Munoz, Universidad Autonoma de Madrid, Spain; Prof. G. Sigl, Hamburg University, Germany
- Andrea Vittino (University of Torino, co–tutor Dr. M. Cirelli, defense: 27.02.2015)
  Dark Matter searches with charged cosmic rays
  Opponents: Dr. G. Raffelt, Max-Planck-Institut für Physik, Munich, Germany; Prof.M. Kachelriess, Trondheim University, Norway
- Stefano Gariazzo (University of Torino, co–tutor Dr. C. Giunti, defense: 22.03.2016)
  New Developments in Cosmology
  Opponents: Prof. G. Miele, Università Federico II, Napoli, Italy; Prof. F.L. Villante, Università de L'Aquila, Italy [**Fubini Prize** for the best PhD thesis in theoretical physics, INFN 2017]
- Simone Ammazzalorso (University of Torino, cotutor Dr. M. Regis, ongoing)
  Cross-correlation studies for dark matter searches

Master Degree Theses

- 2003–2004 – Marco Regis
  Kaluza-Klein particles as dark matter candidates: relic abundance
- 2005–2006 – Viviana Niro
  Neutrinos from dark matter annihilation
- 2007–2008 – Federica Capranico
  Sunyaev–Zeldovic effect from dark matter annihilation in galaxy clusters
- 2007–2008 – Alessandro Buzzatti
  Neutrino masses and dark matter in inverse seesaw supersymmetric models
- 2008–2009 – Elena Baretta
  Dark matter in non–minimal supersymmetric models
- 2010–2011 – Antonio Gallerati
  Sneutrinos as dark matter candidates
- 2010–2011 – Michele Rizzola
  Leptogenesis in seesaw neutrino mass models

- 2010–2011 – Marco Fontana (cotutor: Prof. L. Fatibene, Department of Mathematics, Torino)
  Conservation laws in alternative theories of gravity
- 2010–2011 – Andrea Vittino
  Dark matter searches with radio signals
- 2011–2012 – Elio Grazio
  Dark matter in models with extra–dimensions
- 2011–2012 – Clyo Gulisano
  Sunyaev–Zeldovich effect and dark matter
- 2011–2012 – Marco Brusco
  Direct detection signals of dark matter
- 2012–2013 – Valentina Tamburello (Torino and ETH/Zurich, cotutor: Prof. S. Lilly)
  Theoretical study of the galaxy merger rate
- 2012–2013 – Antonella Verderosa
  Consequencies of dark matter oscillation in an asymmetric scenario
- 2012–2013 – Stefano Colucci (Torino and Bonn University, cotutors: Prof. H. Dreiner Dr. L. Ubaldi)
  Baryogenesis through dark matter annihilation
- 2012–2013 – Lorenzo Bartone
  Phenomenology of Asymmetric Dark Matter
- 2012–2013 – Francesco Maione (cotutor: Prof. L. Fatibene, Department of Mathematics, Torino)
  Rotational curves of galaxies in extended theories of gravity
- 2013–2014 – Michela Negro (cotutor: Dr. L. Latronico, INFN)
  Study of the inclusive spectrum of cosmic ray electrons with the Fermi large area telescope
- 2013–2014 – Gabriele Dalmazzone
  Theoretical and phenomenological analysis of the direct detection signal of dark matter
- 2013–2014 – Alessandro Tomeo
  Particle dark matter in models of New Physics
- 2014–2015 – Riccardo Murgia
  Bounds on the coupling between Dark Matter and Dark Energy from CMB data
  [**Molinari Prize** for the best MD thesis, Department of Physics, University of Torino, 2016]
- 2014–2015 – Simone Ammazzalorso
  Dark matter searches thourgh cross-correlations between the gamma-ray sky and CMB lensing
- 2015–2016 – Maria Tartaglia
  Radio emission from the Buller Cluster
- 2015–2016 – Mattia Mina
  Quantum kinetic equations and neutrinos in the early Universe
- 2015–2016 – Paolo Pinto
  Cosmology in $f(R)$–Palatini teories of gravity
- 2015–2016 – Giovanni Zattera
  Primordial gravitational waves and primordial black holes

- 2016–2017 – Francesco Messina (cotutor: Dr. A. Nagar, INFN)
  Analytical waveform modelling from inspiralling and coalescing compact binaries
- 2016–2017 – Alberto Maldarella (cotutor: Dr. A. Nagar, INFN)
  Improving effective-one-body waveforms from coalescing compact binaries
- 2017–2018 – Virginia Ajani (cotutor: Prof. F. Schmidt, MPA Garching)
  Spherical collapse of dark matter halos in "fuzzy dark matter" models
- 2017–2018 – Jahmall Matteo Bersini
  Galaxy phenomenology from dar matter-baryon interactions
- 2017–2018 – Matteo Nurisso (cotutor: Prof. A. Mignone, Department of Physics, Torino)
  Anisotropic cosmic-ray transport in the Galaxy with Pluto
- Alessanda Amosso (ongoing) (cotutor: Prof. J. Edsjo, University of Stockholm)
  Indirect dark matter searches with neutrinos from the Sun
- Andrea Celon (ongoing)
  Galactic cosmic ray transport and stochastic equation techniques
- Cristina Benso (ongoing)
  keV sterile neutrinos and dark matter
- Rettegno (cotutor: Dr. A. Nagar, INFN) (ongoing)
  Gravitational waves
- Elena Pinetti (ongoing)
  Dark matter through anisotropies

Diploma Theses

- 2003–2004 – Enzo Calò
  Cosmological dynamical evolution of a scalar field: a possible solution to dark energy
- 2004–2005 – Roberto Moretti
  Determination of dark matter and dark energy densities with high redshift supernovae
- 2004–2005 – Jacopo Cane Fracassetti
  Phenomenology of massive neutrinos in double beta decay
- 2004–2005 – Federica Capranico
  Determination of the formation temperature of the cosmic background radiation
- 2005–2006 – Andrea Cavallina
  Universe acceleration and dark energy models
- 2007–2008 – Melissa Gillone
  Cosmological parameters and models of dark energy
- 2007–2008 – Stefania Sansone
  Luminosity distance of high redshift supernovae and dark energy
- 2009–2010 – Stefano Gariazzo
  Dark matter relic abundance in alternative cosmologies

- 2012–2013 – Serafina Di Gioia
  Uniformly accelerated observers in Special Relativity and Unruh effect
- 2015–2016 – Elena Pinetti
  Gravitational waves: general theoretical aspects and phenomenology of pulsars emission
- 2016–2017 – Aurelio Amerio
  Weak lensing and its applications

PhD Opponent

- 2004 – Mia Schelke
  University of Stockholm (Sweden) [tutor: Dr. J. Edsjo]
  Supersymmetric Dark Matter: aspects of sfermion coannihilation
- 2009 – Matteo Galaverni
  University of Ferrara (Italy) [tutor: Prof. N. Mandolesi]
  Photon Propagation as a Probe for Fundamental Physics
- 2012 – Eugenio del Nobile
  University of Southern Denmark (Odense, Denmark) [tutor: Prof. F. Sannino]
  Effective Operators for Dark Matter Detection
- 2013 – Hani Nurbiantoro Santosa
  Scuola Superiore di Studi Avanzati (SISSA, Trieste) [tutor: Prof. P. Ullio]
  Dark Matter Indirect Detection and Subhalos
- 2013 – Valentina de Romeri
  University of Valencia (Spagna) and University of Torino [tutors: Dr. M. Hirsch, Dr. F. Donato]
  New models in particle and astroparticle physics: consequences for dark matter and LHC
- 2013 – Hani Nurbiantoro Santosa
  International School for Advanced Studies (SISSA) [tutor: Prof. P. Ullio]
  Dark Matter Indirect Detection and Subhalos
- 2015 – Giorgio Busoni
  International School for Advanced Studies (SISSA) [tutor: Dr. A. De Simone]
  Dark Matter Indirect Detection and Collider Search: the Good and the Bad
- 2015 – Viviana Gammaldi
  Universidad Complutense de Madrid (Spain) [tutors: Prof. Jose A. R. Cembranos, Prof. Antonio L. Maroto]
  Indirect Searches of TeV Dark Matter
- 2015 – Gaelle Giesen
  Université Paris-Sud (France) [tutor: Dr. M. Cirelli]
  Dark Matter Indirect Detection with charged cosmic rays
- 2015 – Stefano Magni
  Université de Montpellier (France) [tutor: Dr. J. Lavalle]
  Astrophysical aspects of dark matter direct detection
- 2015 – Liberato Pizza
  University of Pisa [tutor: Prof. A. Strumia]
  The role of gravity in the comprehension of the early and late time Universe

- 2016 – Mathieu Boudaud
  Université Grenoble Alpes, France [tutor: Prof. P. Salati]
  Recherche indirecte de matiére noire à travers les rayons cosmiques d'antimatiére

- 2016 – Enrico Morgante
  Université de Geneve, Switzerland [tutor: Prof. A. Riotto]
  Aspects of WIMP Dark Matter searches at colliders and other probes

- 2016 – Sebastian Wild
  Technische Universität München [tutor: Prof. A. Ibarra]
  Phenomenology of dark matter searches: simplified models and novel model-independent approaches

- 2017 – Michael R. Feyereisen
  University of Amsterdam [tutor: Prof. S. Ando]
  Predicting the Statistics of High-Energy Astrophysical Backgrounds

- 2018 – Richard T. Bartels
  University of Amsterdam [tutor: Prof. C. Weniger]
  All The Light We Cannot See

- 2018 – Pablo Fernandéz de Salas
  University of Valencia and IFIC/Valencia [tutor: Prof. S. Pastor]
  All The Light We Cannot See Neutrino Physics from Cosmological Observables and Oscillation Experiments

Master Degree Opponent

- 2005–2006 – Elena Beltritti [tutor: Prof. A. Ferrari]
  Hydrodynamic models of acceleration of supersonic jets from astrophysical sources

- 2006–2007 – Pietro Ferretti [tutor: Prof. A. Diaferio]
  Direct dark matter detection with noble gases

- 2007–2008 – Paolo Olivieri [tutor: Dr. L. Fatibene]
  Alternative theories of gravitation and cosmological applications

- 2008–2009 – Davide Girolami [tutor: Dr. L. Fatibene]
  Spin Foams and Loop Quantum Gravity

- 2009–2010 – Valentina De Romeri [tutor: Dr. F. Donato]
  Dark matter models with large annihilation cross sections

- 2009–2010 – Francesca Calore [tutor: Dr. F. Donato]
  FERMI–LAT gamma–rays and dark matter in modified cosmologies

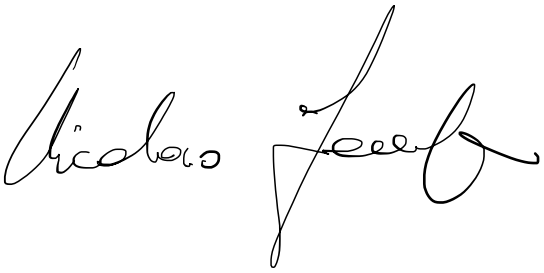
- 2010–2011 – Umberto Battino [tutors: Prof. S. Massaglia e Dr. C. Travaglio]
  Nucleosynthesis in Supernovae Type Ia

- 2010–2011 – Jean Marc Christille [tutor: Prof. A. Ferrari]
  International Telescope Maffei – Antarctic Commissioning – Technological enterprise and scientific goals

- 2010–2011 – Mattia Di Mauro [tutor: Dr. F. Donato]
  Gamma–Rays Constraints on Galactic Dark Matter

- 2011–2012 – Nicolás Cuello [tutor: Prof. A. Diaferio]
  X-rays clusters in Conformal Gravity
- 2012–2013 – Valerio Poggio [tutor: Dr. F. Donato]
  Dark Matter Indirect Detection at Neutrino Telescopes
- 2012–2013 – Federico Genero [tutor: Prof. C. Lamberti]
  Featuring in reaction environment of copper catalysts by means of X-ray absorption spectroscopy
- 2012–2013 – Maria Costanza Campigotto [tutors: Prof. A. Diaferio and Prof. L. Fatibene]
  Light Deflection in Conformal Gravity
- 2013–2014 – Lorenzo Gioannini [tutors: Dr. M. Lattanzi and Dr. A. Sozzetti]
  Ricerca di transiti planetari in serie temporali fotometriche di alta precisione nei campi della survey APACHE
- 2014–2015 – Andrea Gallo Rosso [tutors: Prof. W. Fulgione and Dr. F. Vissani]
  Interazioni da neutrini di bassa energia in rivelatori di materia oscura
- 2014–2015 – Silvia Maconi [tutors: Prof. F. Donato]
  Anisotropies in cosmic rays electrons and positrons
- 2014–2015 – Giovanna Ranotto [tutors: Prof. M. Lattanzi]
  Studio di periodi di rotazione fotometrici di stelle nane rosse
- 2015–2016 – Lorenzo Colombo [tutors: Dr. B. Bucciarelli and Dr. A. Sozzetti]
  Determinazione di frequenze planetarie in regime di bassa metalliticità stellare
- 2017–2018 – Arianna Gallo [tutor: Dr. L. Ostorero]
  The Journey of Hypervelocity Stars

Torino, 8 July 2018



Nome:
Natale Demaria

Posizione:
Ricercatore INFN di II livello

Nazionalità : italiana

CURRICULUM VITAE et STUDIORUM

2006-oggi	Ricercatore II livello dell'Istituto Nazionale di Fisica Nucleare, sezione di Torino
2006-2007	Project Associate presso CERN, Ginevra, Svizzera
1998-2005	Ricercatore III livello, dell'Istituto Nazionale di Fisica Nucleare, sezione di Torino
1997-1999	Fellowship presso CERN, Ginevra, Svizzera
1994-1997	Ricercatore presso il dipartimento di Fisica Nucleare dell'Università di Oxford, UK
1994	Dottore di Ricerca (PhD) presso l'Università degli Studi di Torino
14/12/1989	Laurea in Fisica con 110/110 e lode presso l'Università degli Studi di Torino

Pubblicazioni

Autore di 1035 articoli su rivista, con 31353 citazioni, H-index:74 (ISI Web of Science WOS)

Elenco Responsabilità

2018	Responsabile Nazionale del Tracciatore di CMS (10 sedi, 100 fisici)
2014-2017	Responsabile Nazionale di CHIPIX65, progetto CALL 2013 della CSN5 dell'INFN (7 sedi, 36 fisici/tecnologi)
2015-2017	Responsabile attività di Torino nel progetto Europeo AIDA_2020
2013-oggi	Collaboration Board Chair della collaborazione internazionale RD53 (24 sedi, 150 fisici/tecnologi)
1999-2017	Responsabile attività CMS Tracker del gruppo di Torino e suo rappresentante nel Tracker Institution Board (11 fisici)
2013	Deputy Coordinator dell'Upgrade di Fase 2 del CMS Tracker
2011-2012	Operation manager del CMS Strip Tracker (running, commissioning, tecnical coord.) (50 fisici/ingeneri/tecnici)
2008-2010	Coordinatore operazioni del CMS Strip Tracker (20 fisici/ingeneri)
2007	Responsabile commissioning del rivelatore interno del CMS Strip Tracker (20 fisici/ingeneri/tecnici)
2005-2006	Responsabile costruzione a Torino dei sei Inner Disks del CMS Tracker (10 fisici/ingeneri/tecnici)
2004-2005	Responsabile della costruzione a Torino di 500 rivelatori a silicon microstrip (10 fisici/ingeneri/tecnici)
1996-1999	Responsabile software di ricostruzione del Very Forward Tracker e del Forward Tracking di DELPHI
1994-1995	Responsabile inglese (Oxford+RAL) dell'upgrade del micro vertice di DELPHI

Attività di Ricerca in sintesi

La mia attività di ricerca è stata ed è tuttora svolta nel campo della fisica delle particelle elementari, in particolare con contributi di rilievo sia personali che di coordinamento e management sullo sviluppo, la costruzione, il commissioning ed il running di rivelatori di tracciamento a silicio per importanti esperimenti internazionali.

Dal 1998, faccio parte dell'esperimento CMS (Compact Muon Solenoid) situato sul collisore p-p LHC (Large Hadron Collider) dove mi sono speso per realizzare e far funzionare il più grande rivelatore di tracciamento in silicio ed uno dei più importanti rivelatori dell'esperimento.

Attualmente la mia attività principale è sui futuri upgrade del rivelatore a Pixel per HL_LHC, in particolare per CMS. Dal 2018 sono stato nominato responsabile Nazionale del CMS Tracker. Nel 2011-12 sono stato nel gruppo fondatore della collaborazione RD53, approvata in giugno del 2013 da LHCC, per la realizzazione di elettronica innovativa per pixel ad HL_LHC e sono investito del ruolo di Chair del Collaboration Board. Ho proposto nel 2013 alla commissione 5 dell'INFN nel 2013 un progetto di R&D di micro-elettronica innovativa per realizzare un pixel chip di nuova generazione: ad Ottobre 2013 la proposta è stata approvata, ed io sono il Principal Investigator di CHIPIX65, progetto CALL 2013, con 36 membri partecipanti e sette sedi INFN, coinvolte negli esperimenti CMS ed ATLAS.

Ho avuto un forte coinvolgimento nella costruzione dell'attuale rivelatore di tracciamento di CMS. Nel 1999 Ho fatto partire una nuova attività nel già esistente gruppo di CMS di Torino, e dopo una fase di R&D ho portato al laboratorio tecnologico dell'INFN di Torino la costruzione dei sei dischi interni (TID). Ho poi contribuito all'assemblaggio del Tracker, alla sua installazione e commissioning al CERN per poi diventarne il responsabile del running e delle operazioni durante i due anni più importanti per la raccolta dati che ha portato poi alla scoperta del boson di Higgs (2011-2012) ed altri lavori fondamentali.

In passato ho fatto parte dell'esperimento DELPHI (DEtector for Lepton Photon and Hadron Identification) situato sul collisore e^+-e^- LEP (Large Electron Positron collider) dove ho lavorato a due upgrade del rivelatore di micro vertice, sia sull'hardware che software di ricostruzione.

Dal 2009 il mio interesse si è spostato verso i rivelatori a pixel, dapprima su di un progetto di R&D per pixel monolitici (LEPIX) maturato poi per un interesse per i progetti di Phase 2 di LHC, in particolare sull'elettronica di front-end, con il progetto di micro-elettronica CHIPIX65 ed un forte coinvolgimenti in RD53.

Profilo temporale

Attività principali in DELPHI:

- 1988-90 Luminometro (VSAT) e calorimetro elettromagnetico (FEMC)
- 1990-1993 Analisi di fisica (hadron multiplicity fluctuation, B0-mixing)
- 1994-1996 Rivelatore di vertice: upgrade del 2004, upgrade del 1996 (Oxford)
- 1996-1999 Software di ricostruzione del pixel Very Forward Tracker(CERN)

Attività principali di CMS

- 1997-1999 R&D sensori a microstrip (CERN + Torino)
- 2000-2002 Formazione gruppo CMS-TK Torino, costruzione camera pulita per

costruzione e test, pre-produzione

- 2003-2004 Costruzione 500 moduli tracciatore (Torino)
- 2005-2006 Costruzione 6 mini-dischi interni (TID) del Tracker (Torino)
- 2007-2008 Integrazione e commissioning Tracker (CERN)
- 2009-2012 Running del Tracker di CMS (CERN)

Attività principali upgrade HL_LHC

.

- 2009-2011 Partecipazione progetto LEPIX
- 2010-2013 Definizione linea progettuale per CMS Pixel detector per Phase 2
- 2013 Partecipazione alla formazione di RD53; nominato Collaboration Chair
- 2014 Scrittura del documento MoU di RD53
- 2013-2017 Principal Investigator di CHIPIX65, progetto CALL 2013 CSN5. Disegno di elettronica analogica di front-end ed IP-block, preparazione prima sottomissione in CMOS 65nm dei primi blocchi di prototipi circuitali
- 2018 Responsabile Nazionale CMS Tracker