Curriculum sintetico di ***Silvia Arezzini***

Silvia Arezzini ricopre il ruolo di tecnologo, nel settore informatico, presso la sezione INFN di Pisa dall'anno 2004. La sua assunzione in servizio con incarico a tempo indeterminato risale però al 1991, quando inizia la sua attività in qualità di collaboratore Enti di Ricerca (VI livello professionale), vincendo successivamente (nel 1998) il concorso per il V livello professionale.

Dal 1-1-2007, in seguito a vincita di selezione, è inquadrata nel profilo di primo tecnologo.

Dal 1997 al 2010 ha ricoperto l'incarico di Responsabile del Servizio Calcolo e Reti.

Dal 2007 al 2014 ha ricoperto per due mandati consecutivi l'incarico di Rappresentante del personale tecnologo della sezione di Pisa.

Dal 2005 è il Rappresentante della Sezione di Pisa in seno alla Commissione Calcolo e Reti.

Svolge la sua attività occupandosi di controllo e gestione delle risorse informatiche sia nell'ambito delle infrastrutture che in quello del Calcolo Scientifico.

Collabora con i principali esperimenti di sezione nell'ambito delle attività informatiche, quindi significative percentuali della sua attività sono riferibili all'esperimento CMS (Gruppo I) ed alla Commissione Scientifica Nazionale IV.

Ha fatto parte dei team di ricerca della sede INFN di Pisa impegnati nelle attività di progetti della REGIONE TOSCANA:

- ARIANNA (Ambiente Di Ricerca Interdisciplinare Per L'Analisi Di Neuroimmagini Nell'Autismo: https://arianna.pi.infn.it/) nel periodo 2016-2018
- ADAMo – 2017-2019 ("Aerodinamica Digitale Adattativa per Motocicli" https://www.pi.infn.it/index.php?id=33&backPID=1&tt_news=74) negli anni 2017-2019

Ha lavorato nell'ambito del progetto europeo Horizon 2020, GENERA (Gender Equality Network in the European Research Area), un progetto dedicato allo studio ed al superamento dei gap di genere nelle istituzioni europee (enti, associazioni, università) dedicate alla Fisica: http://genera-project.com/. Successivamente, con disposizione del Presidente INFN (10-luglio-2019) è stata nominato componente del Gruppo di Lavoro INFN dedicato al mantenimento del Network GENERA originato dall'omonimo progetto.

Parallelamente al lavoro effettuato in sezione, prende parte ai lavori di vari working group nazionali interni alla Commissione Nazionale Calcolo e Reti.

Dal 2015 è parte dell' Ufficio Formazione INFN (Struttura Diffusa) all'interno del working group dedicato alla formazione digitale e a distanza (e-learning).

Dal 2018 (Delibera Consiglio Direttivo 14734 27-4-2018) è membro del Team DPO (Data Protection Officer) dell' INFN.

Di seguito si riporta un maggiore dettaglio sulle attività svolte in sezione e in collaborazione con la Commissione Calcolo e Reti.

Personal information

Family name, First name: **CUOCO**, ELENA
ORCID: 0000-0002-6528-3449
Researcher ID: I-8789-2012
Nationality: Italian
URL for web site: https://www.researchgate.net/profile/Elena_Cuoco

Highlights

Chair of General Assembly for ESCAPE (Proposal ID SEP-210506816)

Head of Data Science Office at European Gravitational Observatory, Pisa

Associate Faculty at Scuola Normale Superiore, Pisa

Co-chair of Machine Learning group for LIGO and Virgo Collaboration

Main Proposer and Action Chair of COST ACTION CA17137 (***G2Net***)

Responsible of Foundation for Competence for Software and Service Innovation (COSSI) task for Project **ESCAPE** Proposal ID SEP-210506816

Impact (as of February 2019): Google Scholar H-index **73**, i10-index: **218**

Education

1998 Physics Faculty, University of Pisa, Pisa, Italy, **PhD in Physics**
1993 Physics Faculty, University of Pisa, Pisa, Italy, **Master Degree in Physics**

Current Positions

2018 – Scuola Normale Superiore, Pisa, Italy, **Associate Faculty**
2018 – European Gravitational Observatory, Pisa, Italy, **Head of Data Science Office**

Previous Positions

2016 Astronomy and Astrophysics department, University of Valencia, ES, **Short term visiting scientist**
2016 Physics and Astronomy, University of Glasgow, UK, **Short term visiting scientist**
2014 Physics and Astronomy, University of Glasgow, UK, **SUPA Distinguished visiting scientist**
2004 – 2018 European Gravitational Observatory, Pisa, Italy**, Applied Physicist**
2001 – 2004 Istituto di Fisica Nucleare, Firenze, Italy, **Fixed term researcher**

FELLOWSHIPS AND AWARDS

2016 SPECIAL BREAKTHROUGH PRIZE IN FUNDAMENTAL PHYSICS
1999 – 2001 Osservatorio Astronomico di Arcetri, Firenze, Italy, **PostDoc Fellow**

TEACHING ACTIVITIES

2018 Lectures at Computer Science Department, Bari University, Italy
2018 Lectures at Data Science Ph.D Colloquium, Pisa University, Italy
2018 Lectures at Physics Department, Università di Tor Vergata, Roma, Italy
2011 VESF School, EGO, Italy, **Lecturer**
2010 VESF School, EGO, Italy, **Lecturer**

ORGANISATION OF SCIENTIFIC MEETINGS

2019 **1st** Conference on Machine Learning for Gravitational Waves, Geophysics, Robotics and Control System, January 14th-16th 2019 (**chair**)
2018 Computational Challenges in Gravitational Wave Astronomy, Institute for Pure and Applied Mathematics, UCLA January 28 - February 1, 2019 (**SOC member**)
2018 XXIII SIGRAV Conference-Black holes: Theory and observations (**SOC member**)
2018 Machine Learning workshop at EGO/ 30 participants /Italy **(organizer**)
2018 Machine Learning face to face for LIGO Virgo Collaboration / 60 participants / USA **(organizer)**
2017 Machine Learning face to face for LIGO Virgo Collaboration / 60 participants / CERN **(organizer)**
2016 XXII SIGRAV Conference – A Century of General Relativity. In the era of Gravitational Waves. Cefalù, Italy (**SOC member**)
2016 5th GraWIToN school /30 participants /Roma La Sapienza, Italy (**SOC member**)
2015 First GraWIToN Data Analysis school / 30 participants / GSSI, Italy (**SOC chair**)
2015 Workshop on Electromagnetic follow-up program, EGO (**LOC member**)
2015 First GraWIToN Basic school/ 30 participants / EGO, Italy (**SOC chair**)
2012 Theory and application of signal processing methods (in GW detection, medical science and engineering) / 60 participants / EGO, Italy

INSTITUTIONAL RESPONSIBILITIES

2019- **Chair of General Assembly for ESCAPE EU project**
2018- **Cost Action CA17137 Action Chair**
2014-2018 GraWIToN Fp7-Marie Curie Actions.ID 606176 **Scientific coordinator**
2015 European Gravitational Observatory, Italy, **Outreach coordinator**
2010 European Gravitational Observatory, Italy, **Outreach coordinator**
2005 – 2007 European Gravitational Observatory, Italy, **Seminar organizer**

REVIEWING ACTIVITIES

2014 – 2018 Scientific Advisory Board, GraWIToN FP7 Project ID: 606176
2017 EGO PostDoc fellowship program, Italy, **Member of selection committee**
2017 Department of Astronomy and Astrophysics, University of Valencia, ES, **PhD Committee member**
2017 Department of Astronomy and Astrophysics, University of Valencia, ES**, PhD Committee substitute chair**

MEMBERSHIPS OF SCIENTIFIC SOCIETIES

2015 – 2018 Member of Board of Directors of SIGRAV (Società Italiana di Relatività Generale e Fisica della Gravitazione)

Representative Publications as Senior Author [excluding the most of collaboration paper]

1. Total-variation methods for gravitational wave denoising: performance tests on Advanced LIGO data, Alejandro Torres-Forné, **Elena Cuoco**, Antonio Marquina, José A. Font, José M. Ibáñez, Phys. Rev. D 98,084013, 2018
2. Wavelet-based Classification of Transient Signals for Gravitational Wave Detectors**, Elena Cuoco**, Massimiliano Razzano and Andrei Utina, #1570436751 accepted reviewed paper at EUSIPCO2018.

3. Image-based deep learning for classification of noise transients in gravitational wave detectors, Massimiliano Razzano**, Elena Cuoco**, Class.Quant.Grav. 35 (2018) no.9, 095016.
4. GW170817: Observation of Gravitational Waves from a Binary Neutron Star Inspiral LIGO Scientific and Virgo Collaborations (B. P. Abbott et al.), Phys.Rev.Lett. 119 (2017) no.16, 161101.
5. Strategy for signal classification to improve data quality for Advanced Detectors gravitational-wave searches, **Elena Cuoco**, Jade Powell, Alejandro Torres-Forné, Ryan Lynch, Daniele Trifirò, Marco Cavaglià, Ik Siong Heng, José A.Font, Nuovo Cim. C40 (2017) no.3, 124.
6. Classification methods for noise transients in advanced gravitational-wave detectors II: performance tests on Advanced LIGO data, Jade Powell, Alejandro Torres-Forné, Ryan Lynch, Daniele Trifirò, **Elena Cuoco**, Marco Cavaglià, Ik Siong Heng, José A. Font, Class.Quant.Grav. 34 (2017) no.3, 034002.
7. Classification methods for noise transients in advanced gravitational-wave detectors Jade Powell, Daniele Trifirò, **Elena Cuoco**, Ik Siong Heng, Marco Cavaglià, Class.Quant.Grav. 32 (2015) no.21, 215012.
8. Wavelet Tests for the Detection of Transients in the VIRGO Interferometric Gravitational Wave Detector, Leonardo Fabbroni, Marina Vannucci, **Elena Cuoco**, Giovanni Losurdo, Massimo Mazzoni, Ruggero Stanga, IEEE Trans.Instrum.Measur. 54 (2005) no.1, 151-162.
9. Noise parametric identification and whitening for LIGO 40-meter interferometer data **Elena Cuoco**, Giovanni Losurdo, Giovanni Calamai, Leonardo Fabbroni, Massimo Mazzoni, Ruggero Stanga, Gianluca Guidi, Flavio Vetrano, Phys.Rev. D64 (2001) 122002.
10. On line power spectra identification and whitening for the noise in interferometric gravitational wave detectors**, Elena Cuoco**, Leonardo Fabbroni, Massimo Mazzoni, Ruggero Stanga, Giovanni Calamai, Giovanni Losurdo, Flavio Vetrano, Class.Quant.Grav. 18 (2001) 1727-1752.

Invited Presentations at International Conferences and Workshops

1. CERN Seminar, February 13th 2019, CERN, Geneve
2. 2019 Computational Challenge in Gravitational Wave Astronomy, January 2019, IPAM, Los Angels, USA
3. 2018 SOPHIA, Spring board for Artificial Intelligence, November 2018, Nice, France
4. 2018 3rd ASTERICS-OBELICS workshop, Cambridge
5. 2018 EUSPIC02018, Special Session on Advances in GW Signal Processing and Data Analysis, Rome, Italy
6. 2018 Fifteenth Marcel Grossmann Meeting, Roma. Italy
7. 2018 Round table on Machine Learning, Marcel Grossmann 15 Meeting, Roma. Italy
8. 2018 Connecting The Dots 2018, Seattle, USA
9. 2017 2nd ASTERICS-OBELICS workshop, Barcelona, Spain
10. 2016 11th Workshop on Science with the New generation of High Energy Gamma-ray Experiments, Pisa, Italy
11. 2016 XXII SIGRAV Conference – A Century of General Relativity. In the era of Gravitational Waves. Cefalù, Italy
12. 2009 Gravitational Waves parallel session in Marcel Grossmann Meeting 12 2009, Paris, France
13. 2006 Gravitational Waves parallel session in Marcel Grossmann Meeting 11 2006, Berlin, Germany
14. 2003 Summer School at Porquerolles Harmonic Analysis and Rational Approximation: their rôles in signals, control, and dynamical systems theory

Recent presentation at Conference and Workshop and Seminars and Outreach

2018 Lectures at Computer Science Department, Bari University, Italy

2018 Lectures at Data Science Ph.D Colloquium, Pisa University, Italy
2018 Lectures at Physics Department, Università di Tor Vergata, Roma, Italy
2016 EuroPython 2016, Bilbao, Spain
2016 Lectures at Astronomy Department, Bologna University, Italy
2011 9th Amaldi conference, Cardiff, UK
2009 - Several outreach and dissemination talks on Gravitational Waves
1995 - Several presentations at Virgo and LIGO/Virgo Collaboration meeting

Organization of International Conferences

2019 **1st** Conference on Machine Learning for Gravitational Waves, Geophysics, Robotics and Control System, January 14th-16th 2019 (**chair**)
2018 Computational Challenges in Gravitational Wave Astronomy, Institute for Pure and Applied Mathematics, UCLA January 28 - February 1, 2019 (**SOC member**)
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2016 5th GraWIToN school /30 participants /Roma La Sapienza, Italy (**SOC member**)
2015 First GraWIToN Data Analysis school / 30 participants / GSSI, Italy (**SOC chair**)
2015 Workshop on Electromagnetic follow-up program, EGO (**LOC member**)
2015 First GraWIToN Basic school/ 30 participants / EGO, Italy (**SOC chair**)
2012 Theory and application of signal processing methods (in GW detection, medical science and engineering) / 60 participants / EGO, Italy

Curriculum vitae of Massimiliano Razzano

Current Position
Associate Professor
Deparment of Physics, University of Pisa

My research interests are in the fields of astroparticle physics, high-energy astrophysics and gravitational-wave physics. In particular, I am interested in pulsar astrophysics and in the multimessenger study of the most extreme phenomena in the Universe, exploiting both high-energy eletromagnetic radiation (X and gamma rays) and gravitational waves.
In 2003 I joined the Fermi-LAT collaboration as an undergraduate student, and as a member of this collaboration, I have been involved in many works related to the Large Area Telescope, including the construction and development of the instrument, the monitoring of its performance, and the analysis and interpretation of the scientific data. During my postdoc I spent various periods in the US visiting the University of California in Santa Cruz and the University of Stanford, working mainly on LAT data analysis. Within the Fermi-LAT collaboration, I served as coordinator of the Galactic Sources science group and of the sky simulation group.
From 2013 I was co-investigator in a proposal on multimessenger physics, that was funded by the Italian Ministry for Education and University (Miur FIRB). Within that 3-year project (2013-2016) I joined the Virgo collaboration and organized a research unit on multimessenger physics within the Virgo group in Pisa.
I regularly present my work at international conferences and invited talks. I am also serving as a referee for scientific journals. From 2006 I have been teaching at various courses at the Department of Physics at the University of Pisa and I am involved in various activities of public outreach.

Education

- **Ph.D. in Physics**, University of Pisa, June 2007.
- **M.S. in Physics** (Laurea Specialistica in Scienze Fisiche), University of Pisa, October 2003
- **B.S. in Physics** (Laurea in Fisica), University of Pisa, January 2003
- **High School Diploma** (Maturità Scientifica), Liceo Scientifico “F. Vercelli” of Asti, July 1998.

Highlights of Research Activities

- Development and application of machine learning and deep learning methods to physics and astrophysics, with particular attention to gravitational waves;
- Studies on future strategies for multimessenger study of compact objects. Data analysis of gravitational waves;
- Study of variable sources in the Fermi-LAT data;
- Data analysis and development of search techniques for pulsars at gamma and X-ray energies;
- Simulations of gamma-ray emission from different sources, in particular pulsars;