

# Curriculum vitae di Daniele Pedrini

- Nato a Milano il 18 Gennaio 1956
- 1975: Maturità Scientifica (60/60) presso il Liceo Scientifico Statale Albert Einstein di Milano
- 1980: Laurea in Fisica all'Università Statale di Milano il 14 Luglio 1980 (110/110 e lode)
- 1980-1981: servizio militare nell'Aeronautica Militare
- 1982-oggi: dal 1982 svolge l'attività di ricerca scientifica presso il gruppo di Fisica Sperimentale delle Particelle Elementari, inizialmente nella sezione INFN di Milano e dal 2006 presso la sezione INFN di Milano Bicocca
- 1983-1984: collaborazione scientifica con la collaborazione FRAMM, esperimento NA1 al CERN
- 1984-1985: borsa di studio INFN biennale al Fermilab (Batavia, Illinois, USA) nell'ambito dell'esperimento E687
- 1986: contratto a tempo determinato (art.36) presso la sezione INFN di Milano
- 1988: Ricercatore a tempo indeterminato presso la sezione INFN di Milano
- 1993-1996: dal Giugno 1993 al Giugno 1996 ha coordinato, in qualità di *Responsabile Nazionale* nei confronti dell'INFN, la partecipazione dei gruppi italiani coinvolti nell'esperimento E831 (*upgrade* di E687) al Fermilab
- 1998-2005: inizia la collaborazione scientifica con l'esperimento BTeV al Fermilab
- 1999-2005: membro del *Membership Committee* di BTeV
- 2000: Primo Ricercatore presso la sezione INFN di Milano
- 2001-2006: Rappresentante dei ricercatori della sezione INFN di Milano
- 2003-2005: *Responsabile Nazionale* dell'esperimento E831 al Fermilab
- 2003-oggi: dal 2003 ha iniziato la collaborazione con Physics Letter B come referee di articoli sperimentali
- 2005-oggi: da Giugno 2005 inizia la collaborazione scientifica con l'esperimento CMS al CERN

- 2006-2018 fa parte del *Heavy Flavour Averaging Group* (HFAG) il gruppo collegato al Particle Data Group che si occupa di calcolare le medie delle varie quantità misurate per gli *Heavy Flavours*
- Settembre 2006-Settembre 2012: Coordinatore della CSN1, Commissione Scientifica Nazionale che si occupa della Fisica delle Particelle agli acceleratori, per la sezione INFN di Milano Bicocca
- Settembre 2006-Settembre 2012: nell'ambito della CSN1 è stato referee dei seguenti esperimenti: NA62, BaBar, SuperB; è stato inoltre osservatore della CSN1 in CSN4
- 2008: Dirigente di Ricerca presso la sezione INFN di Milano Bicocca
- 2010-Settembre 2012: ha fatto parte del Gruppo Lavoro Valutazione (GLV) dell'INFN per la parte che riguarda la CSN1
- 2010-oggi: dal 2010 ha iniziato la collaborazione con Physical Review D come referee di articoli sperimentali
- 2012-oggi: dal 2012 ha iniziato la collaborazione con Journal of High Energy Physics come referee di articoli sperimentali
- Ottobre 2012-Ottobre 2020: Direttore della sezione INFN di Milano Bicocca
- Febbraio 2020-oggi: PI del progetto "Pignoletto". L'obiettivo del progetto è monitorare il territorio per realizzare un'agricoltura di precisione, utilizzando rilevatori e sistemi a pilotaggio remoto tipo i droni ( <https://www.pignolettomibinf.it/> ).
- pubblicazioni al 21 Dicembre 2022 (da INSPIRE): 1275
- h-index al 21 Dicembre 2022 (da INSPIRE): 176



# Marica Antonacci

## ESPERIENZA LAVORATIVA

### Cloud Computing expert

**INFN - Istituto Nazionale di Fisica Nucleare** [ 10/2013 – Attuale ]

Città: Bari

Paese: Italia

*Da Gennaio 2020: Primo Tecnologo*

*Da Ottobre 2013 a Dicembre 2019: Tecnologo*

Ho partecipato attivamente a diversi progetti e iniziative nazionali ed europei incentrati sullo sviluppo e l'integrazione di soluzioni open-source per sistemi di storage e calcolo distribuiti. Durante la mia partecipazione al progetto europeo H2020 INDIGO-DataCloud (aprile 2015 - settembre 2017) e ai suoi progetti spin-off (DEEP-HybridDatacloud, eXtreme-DataCloud e EOSC-Hub), ho fornito importanti contributi alla realizzazione del layer Platform-as-a-Service che abilita la federazione di ambienti cloud eterogenei, sperimentando soluzioni innovative, come Apache Mesos e Kubernetes, e sfruttando la virtualizzazione leggera basata sui container. Attualmente sono responsabile della manutenzione e dell'evoluzione del middleware PaaS e del suo utilizzo in servizi di produzione come Laniakea@ReCaS, in alcuni progetti H2020 in corso come C-SCALE, EGI-ACE, interTwin, AI4EOSC e nel contesto del progetto INFN Cloud. Quest'ultimo è un progetto interno iniziato ufficialmente nel 2020 e finalizzato alla costruzione di un cloud nazionale distribuito per le comunità scientifiche dell'INFN. Da gennaio 2020 coordino le attività del Work Package dedicato all'evoluzione dei servizi core e all'implementazione di nuovi use-cases.

Ricopro il ruolo di amministratore di sistema del sito cloud di produzione presso il datacenter ReCaS (INFN-Bari) e sono responsabile della sua integrazione nella EGI Federated Cloud.

Sono stata organizzatrice e docente di diversi corsi sul cloud computing, sull'automazione e orchestrazione di servizi.

### Projects:

- Da Settembre 2022: H2020 Project **AI4EOSC "Artificial Intelligence for the European Open Science Cloud"**
- Da Settembre 2022: H2020 Project **interTwin "An interdisciplinary Digital Twin Engine for science"**
- Da Gennaio 2021: H2020 Project **C-SCALE "Copernicus - eoSC AnaLytics Engine"**
- Da Gennaio 2021: H2020 Project **EGI-ACE "EGI Advanced Computing for EOSC"**
- Da Set 2019 ad Ago 2022: H2020 Project **IoTwins "Distributed Digital Twins for industrial SMEs: a big-data platform"**
- Da Lug 2019 a Dic 2022: H2020 Project **EOSC-Pillar "Coordination and Harmonisation of National Initiatives, Infrastructures and Data services in Central and Western Europe"**
- 2018-2021: H2020 Project **EOSC-Hub "Integrating and managing services for the European Open Science Cloud"**
- 2017-2020: H2020 Project **DEEP-HybridDataCloud "Designing and Enabling E-infrastructures for intensive Processing in a Hybrid DataCloud"**
- 2017-2021: H2020 Project **XDC "eXtreme DataCloud"**
- 2015-2017: H2020 Project **INDIGO-DataCloud**
- 2014-2015: **PRISMA** (PON Ricerca e Competitività 2007-2013, Avviso 254/Ric)
- 2012-2014: **ReCaS** (PON Ricerca e Competitività 2007-2013, Avviso 254/Ric)

## **Software Engineer**

**Advanced Computer Systems S.p.A.** [ 01/2003 – 09/2012 ]

Città: Matera

Paese: Italia

Ho lavorato presso ACS S.p.A. (acquisita da Exprivia nel 2016) come software engineer. Ho contribuito alla progettazione, implementazione e collaudo di soluzioni software per il ground segment delle missioni di Earth Observation dell'ESA, come Cryosat e GOCE. Ho coordinato le attività di sviluppo e integrazione come system engineer nel progetto Cryosat-2 IPF (Instrument Processing Facility) e nella prima fase del progetto Sentinel-2 PDGS (Payload Data Ground Segment).

## **ISTRUZIONE E FORMAZIONE**

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### **Laurea V.O. in Fisica**

**Università degli Studi di Bari** [ 23/07/2001 ]

Indirizzo: Bari (Italia)

### **Master Universitario di II Livello**

**Università del Sannio** [ 11/2001 – 11/2002 ]

Indirizzo: Benevento (Italia)

Tecnologie del Software

### **Laurea in Informatica**

**Università degli Studi di Bari** [ 11/10/2006 ]

Indirizzo: Bari (Italia)

### **Master Universitario di II Livello**

**Università degli Studi di Bari** [ 10/2012 – 10/2013 ]

Sviluppo e Gestione di Data Center per il calcolo scientifico ad alte prestazioni

## **COMPETENZE**

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### **Competenze IT**

- Conoscenza approfondita del middleware OpenStack;
- Esperienza nell'installazione, configurazione e test di infrastrutture cloud IaaS basate su OpenStack in ambienti geograficamente distribuiti;
- Ottima padronanza nell'utilizzo di software di configurazione come Puppet e Ansible;
- Conoscenza ed esperienza nell'installazione e nel test di sistemi di storage distribuito (GlusterFS, Ceph);
- Conoscenza approfondita di Apache Mesos Resource Manager e dei suoi principali Framework (es. Marathon e Chronos);
- Conoscenza dello standard TOSCA per la descrizione di topologie e servizi in ambienti cloud;
- Conoscenza di Docker (creazione di Dockerfile, build automatizzate, ecc.) e di strumenti di orchestrazione di container come Kubernetes;
- Conoscenza dei principali meccanismi di autenticazione e autorizzazione: x509, SAML e OpenID-Connect. Esperienza nell'integrazione di applicazioni e servizi con sistemi AAI (in particolare OIDC);
- Esperienza nell'installazione e configurazione di Hashicorp Vault, uno strumento per la gestione dei segreti, e progettazione e implementazione della sua integrazione per la protezione dei dati sensibili;
- Progettazione e sviluppo di software secondo il paradigma Object-Oriented;
- Programmazione C/C++, Java, Python;
- Utilizzo di strumenti di ingegneria del software quali: Rational Rose Suite; Enterprise Architect; JIRA, OpenProject, Confluence e Redmine per il bug tracking e il project tracking.

### Pubblicazioni rilevanti

- Tangaro, M.A. et al., Laniakea@ReCaS: exploring the potential of customisable Galaxy on-demand instances as a cloud-based service. BMC Bioinformatics [this link is disabled](#), 2021, 22, 544
- Borghesi, A. et al., IoTwins: Design and implementation of a platform for the management of digital twins in industrial scenarios. J.C. Proceedings - 21st IEEE/ACM International Symposium on Cluster, Cloud and Internet Computing, CCGrid 2021, 2021, pp. 625–633
- M. Caballer et al., Deployment of Elastic Virtual Hybrid Clusters Across Cloud Sites, Journal of Grid Computing 19(1), 4 (2021)
- M. Tracolli et al., Using DODAS as deployment manager for smart caching of CMS data management system, J. Phys.: Conf. Ser. 1525(1) (2020) 012057
- Costantini, A. et al., A Cloud-Edge Orchestration Platform for the Innovative Industrial Scenarios of the IoTwins Project. Lecture Notes in Computer Science (including subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics), 2021, 12950 LNCS, pp. 533–543
- Tracolli M. et al., Using DODAS as deployment manager for smart caching of CMS data management system. Journal of Physics: Conference Series, 2020, 1525(1), 012057
- M.A. Tangaro et al., Laniakea: An open solution to provide Galaxy on-demand instances over heterogeneous cloud infrastructures, GigaScience 9(4) (2020)
- A. Lopez Garcia et al., A cloud-based framework for machine learning workloads and application, IEEE Access 8, pp. 18681–18692 (2020) 8950411
- Monaco A. et al., The PERSON project: a serious brain-computer interface game for treatment in cognitive impairment. Health and Technology, 2019, 9(2), pp. 123–133
- Spiga D. et al., A container-based solution to generate HTCondor Batch Systems on demand exploiting heterogeneous Clouds for data analysis. 2017 IEEE Nuclear Science Symposium and Medical Imaging Conference, NSS/MIC 2017 - Conference Proceedings, 2018, 8533143
- D. Salomoni et al., Indigo-DataCloud: a data and computing platform to facilitate seamless access to E-infrastructures, Journal of Grid Computing 16(3), pp. 381–408 (2018)

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*Autorizzo il trattamento dei miei dati personali presenti nel CV ai sensi dell'art. 13 d. lgs. 30 giugno 2003 n. 196 - "Codice in materia di protezione dei dati personali" e dell'art. 13 GDPR 679/16 - "Regolamento europeo sulla protezione dei dati personali".*

# Curriculum Vitae

## PERSONAL INFORMATION

NAME: Bozzi, Concezio  
DATE OF BIRTH: Dec. 25th 1968, Chieti, Italy  
RESEARCHER UNIQUE IDENTIFIER: [orcid.org/0000-0001-6782-3982](https://orcid.org/0000-0001-6782-3982)  
INSPIRE PROFILE: <http://inspirehep.net/author/profile/C.Bozzi.1>  
H-INDEX: 122 (source: scopus.com)  
FULL PUBLICATIONS LIST: <https://inspirehep.net/authors/1015512>

## EDUCATION

1996 PhD in Physics, Pisa University  
1992 MSc in Physics, Pisa University

## CURRENT POSITION

2019 – Dirigente di Ricerca, INFN Sezione di Ferrara

## PREVIOUS POSITIONS

2016 – 2019 Project Associate, *EP Department, CERN*  
2015 – 2016 Scientific Associate, *EP Department, CERN*  
2007 – 2018 Primo Ricercatore, INFN Sezione di Ferrara  
1998 – 2006 Ricercatore, INFN Sezione di Ferrara  
2004 – 2015 Lecturer (Professore a Contratto), Ferrara University

## FELLOWSHIPS

1997 – 1998 Post-doctoral fellowship, Pisa University

## TEACHING ACTIVITIES

2017 Qualification for Full Professorship in Italian Universities, sector: 02/A1  
2010 – 2015 Lecturer (MSc) – Phenomenology of Electroweak Interactions, Ferrara U  
2009, 2011 Lecturer (BSc) – Subatomic Physics, Ferrara U  
2004 – 2010 Lecturer (MSc) – B Meson Physics, Ferrara U  
2002, 2010 Invited Lecturer – CP Violation, Nordic Particle Physics School, Spaatind (Norway)

## ORGANISATION OF SCIENTIFIC MEETINGS

- 2022 International Conference of High Energy Physics (ICHEP), ~1000 participants, Bologna (Italy): member of the Local Organizing Committee
- 2020 International Conference of High Energy Physics (ICHEP), ~1000 participants, Prague (Czech Republic), held on-line due to COVID-19: co-chair of the Software and Computing track
- 2019 – Computing in High-Energy Physics (CHEP) Conference series, ~500 participants: member of International Advisory Committee (IAC)
- 2016 Workshop Prospects and challenges for semitauonic decays at LHCb, (CERN), 35 participants: member of the Organizing Committee (OC)
- 2012 – 2015 International School of Physics “Niccolò Cabeo” (Ferrara), 40 participants: co-chair of OC
- 2012 – Italian Series of Meetings on High Energy Physics (Incontri di Fisica delle Alte Energie), 150 participants: co-chair of Local OC and editor of the proceedings of the 2012 edition, member of the scientific committee (SC)
- 2009 – International Series of Meetings on B Physics, 40 participants: member of SC and local organizer of the 2009 edition
- 2008 Vxb workshop, SLAC (Stanford CA, USA): member of OC, 30 participants
- 2000 International Conference on CP Violation (Ferrara): member of Local OC and editor of the conference proceedings, 80 participants

## INSTITUTIONAL RESPONSIBILITIES

- 2022- INFN Representative in the European Open Science Cloud (EOSC) Association
- 2022- INFN Representative in the Executive Board of the Italian Computing and Data Infrastructure (ICDI)
- 2022- INFN Representative in the Council of the European Grid Initiative (EGI) Foundation
- 2022- Member of the INFN Committee for Scientific Computing (C3SN)
- 2019 – Member of the Worldwide LHC Computing Grid (WLCG) Management Board, CERN, 30 people
- 2019 – Member of the WLCG Grid Deployment Board (GDB), CERN, 70 people
- 2019 – Member of the LHCb Technical Board, CERN, 25 people
- 2019 – Member of the LHCb Operations Planning Group, CERN, 21 people
- 2019 – Member of the LHCb Physics Planning Group, CERN, 22 people
- 2019 – Computing Project Leader, LHCb, CERN, 30 people
- 2018 – 2021 Team Leader, INFN Timespot Ferrara group, 3 people
- 2016 – 2018 Chair of the National Computing Board, LHCb, CERN, 15 people
- 2015 – 2017 Co-convener of Working Group on Semileptonic b-hadron Decays, LHCb, CERN, 30 people
- 2014 – 2016 Co-convener of the Working Group on Flavour Physics, “What next” initiative on Particle Physics in the next ten years, INFN, Rome
- 2013 – 2014 Team Leader, INFN LHCb Ferrara group, 15 people
- 2013 – 2014 Member of the Collaboration Board, LHCb, CERN, 60 people
- 2014 – 2018 National representative of LHCb computing, INFN
- 2011 – Member of Physics Ph.D Board, Ferrara University

- 2009 – 2015 Member of Physics BSc and MSc Boards, Ferrara University
- 2009 – 2011 INFN representative in meetings of the Computing Resources Review Board (CERN)

## MEMBERSHIP IN COMMISSIONS OF TRUST

- 2022 Reviewer for the Research Agency of the Spanish Government
- 2019 – Reviewer for the Swiss National Science Foundation (SNF)
- 2016 Reviewer for the Italian National Agency for the Evaluation of Universities and Research Institutes (ANVUR), VQR<sub>2011-2014</sub>
- 2007 – 2012 Italian representative, appointed by the INFN Executive Board, in the CERN WLCG Computing Resources Scrutiny Group. Referee of ATLAS and CMS computing
- 2010 member of the DoE committee reviewing computing and operations of the US LHC collaborations, Argonne Nat. Lab. IL (US)
- 2005 – 2011 member of the INFN committee reviewing scientific computing of the LHC experiments in Italy, the Italian Tier<sub>1</sub> at CNAF, the INFN Grid and other EU-funded projects. Committee chair in 2007-2011
- 2005 member of CERN committee in charge of the review of the Computing Technical Design Reports of the LHC experiments
- 2004 member of the DoE committee reviewing the BTeV experiment, Fermi National Laboratory, Batavia IL (US)
- 2004 – 2011 member of the INFN National Scientific Committee for Physics at Particle Accelerators (CSN<sub>1</sub>)

## MAJOR COLLABORATIONS AND RELATED ACTIVITIES

- 2018 – 2021 Timespot, INFN: R&D on solid-state tracking devices with timing information for future experiments at colliders
- 2009 – LHCb experiment, CERN: heavy flavour physics analysis, scientific computing
- 2008 – Heavy Flavour Averaging Group (HFLAV): world averages of flavour physics quantities
- 1999 – Babar experiment, SLAC (USA): silicon vertex tracker, heavy flavour physics analysis, simulation and scientific computing
- 2004 – 2007 International Linear Collider project: R&D on monolithic active pixel sensors
- 1995 – 1998 CMS experiment, CERN: silicon detector development and modelization, design of silicon tracker
- 1992 – 1998 ALEPH experiment, CERN: vertex detector, physics analysis

## SELECTED CONFERENCES AND SEMINARS

- 2021 Software e computing in LHCb: la sfida di Run<sub>3</sub> (e oltre), Seminario CNAF, Bologna (Italy)
- 2019 *LHCb Computing: status and challenges*, joint HSF/OSG/WLCG Workshop, Jefferson Lab, Newport News VA (USA)



2018	<i>Challenges in the LHCb trigger</i> , joint HSF-WLCG Workshop, Naples (Italy)
2017	<i>Recent LHCb results on semileptonic b-hadron decays</i> , EPS-HEP Conference, Venice (Italy)
2016	<i>R(D) and R(D*) measurements at LHCb</i> , CKM Workshop, Mumbai (India)
2016	<i>Quark Flavour: Experimental results</i> , SUSY Conference, Melbourne (Australia)
2016	<i>The LHCb software and computing upgrade for Run3</i> , CHEP Conference, San Francisco (US)
2015	<i>Semileptonic decays at LHCb</i> , Belle II Theory Interface Platform, Krakow (Poland)
2013	<i>Review of B and B<sub>s</sub> decays</i> , Physics in Collision Conference, Beijing (China)
2012	<i>LHCb results on semileptonic B, B<sub>s</sub> and Λ<sub>b</sub> decays</i> , CKM Workshop, Cincinnati (US)
2012	<i>Review of semileptonic decays and B → D<sup>(*)</sup> τ ν at Babar</i> , HQL Conference, Prague (Czech Republic)

## MENTORING

- M. Argenton (PhD student)
- B. Couturier (PhD student and CERN staff in the LHCb computing group)
- B. Siddi (PhD, currently at private company)
- E. Dall’Occo (MSc, PhD at NIKHEF, Amsterdam, currently post-doc at the Technische Universitaet Dortmund, recipient of the 2017 LHCb early career award)
- F. Betti (MSc, PhD in Bologna, currently post-doc in Bologna)
- V. Battista (MSc, PhD at EPFL Lausanne, currently at Swiss private company)
- A. Lupato (MSc, PhD in Padova, currently post-doc in Manchester)
- A. Mazurov (PhD, currently at private company)
- M. Fiore (PhD, currently at IT company in Bologna)
- P. Franchini (PhD, currently research fellow in Warwick, UK)
- V. Azzolini (PhD, currently research associate at MIT, Cambridge, US)
- A. Petrella (PhD, currently at United Nations, Geneva).

## OUTREACH ACTIVITIES

2008-2014	Local organizer of the International Physics Masterclass, an outreach initiative for high-school students managed by the European Particle Physics Outreach Group (EPPOG) and coordinated in Italy by INFN
2007,2011-2014	Seminars on experimental particle physics in high schools
2010-2011,2014	Co-organizer of the Ferrara edition of the European Researchers’ Night, within the EU-financed DREAMS project
2013-2014	Speaker in public events on the discovery of the Higgs boson
2013-2018	Organiser and guide of visits of high-school and university students to CERN and the LHCb experimental site
2014	Organiser of a refresher course in physics for high-school teachers
2016	Author of an article ( <i>Per qualche sigma in più</i> ) published on the INFN magazine <i>Asimmetrie</i> n.20

2018

Co-author of an article (*Beauty quarks test lepton universality*) published as cover story in the *CERN Courier* vol. 58 n.3

## RECENT SCIENTIFIC COMPUTING ACTIVITIES

Since 2013: computing resource manager of LHCb, in charge of: ensuring that an adequate level of computing resources is granted by the computing centers providing resources to LHCb; preparing half-yearly reports on resource usage and computing needs; participating to the review process by the Computing Resources Scrutiny Group (C-RSG) within the CERN LHC Resource Review Board.

2015-2020: development of fast and parametric simulations for LHCb with the goal of generating datasets by using ~100 times less computing work than standard simulation, in collaboration with an INFN fellow on scientific computing, of whom I was PhD supervisor, and other LHCb colleagues.

2015-2018: responsible of software and computing activities in view of the upgrade of the LHCb experiment. I presented the status of this project at international conferences and workshops. I was editor of two Technical Design Reports, on Software & Computing and the Computing Model for the LHCb Upgrade, reviewed and approved by the CERN LHC Committee (LHCC) in 2017 and 2018. The R&D work culminating in these documents pave the way towards the actual implementation, to be completed by 2022, when the upgraded LHCb detector will enter operations and take data from LHC collisions. The LHCb upgrade represents a formidable challenge in terms of software and computing, as the expected data rate from the detector exceeds by a factor 30 the one collected previously, and it is not possible nor practical to plan a corresponding increase in the computing resources. Therefore, an innovative R&D program, of which I was responsible, was carried out, exploring several dimensions of software and computing. The LHCb codebase was completely overhauled towards the optimal, cost-effective usage of modern computing architectures such as accelerators (GPGPUs), vector registers and multi-threading, thus enabling offline-quality software triggering and online data processing, with a subsequent reduction of the pressure on the offline computing, most notably storage. The computing model of LHCb was also significantly rearranged and the ever-increasing demands on compute work required by Monte Carlo simulation have been met by developing faster simulation techniques that enable the production of the required samples with factor less computing work without sacrificing in physics accuracy of the simulation. Due to these efforts, LHCb is now ready to enter in a different realm and explore flavour physics at a much more precise scale than before.

Since 2019: Project Leader of LHCb Computing, managing and coordinating all activities related to research and development, commissioning, operations, and maintenance of the LHCb core and distributed computing infrastructures, with particular regard on the preparation of the data taking with the upgraded LHCb detector. In this capacity, I am also member of the LHCb Technical Board, of the Worldwide LHC Computing Grid (WLCG) Management Board and of the WLCG Grid Deployment Board.

## RECENT PHYSICS RESEARCH ACTIVITIES

Since 2008: member the Heavy Flavour Averaging Group (HFLAV), responsible of averaging the measurements of the  $|V_{ub}|$  element of the CKM matrix, using inclusive charmless semileptonic decays of b hadrons. These averages were included in reports at major international conferences, in the CKM matrix review published in Physics Reports, in the biennial Review of Particle Physics since 2010. I wrote the corresponding section of the HFLAV review, published in EPJC.

2011-2013: studied, together with colleagues from Italy, Germany and the Netherlands, semileptonic decays of  $B^0$  mesons with LHCb data, to measure CP violation in mixing and matter-antimatter oscillations of neutral B mesons. Two Master theses supervised. The outcome of these studies was: a CP asymmetry measurement that settled a tension with the SM present in previous data, and a measurement of the  $B_0$  oscillation frequency that is the most precise performed so far and that dominates the world average. On a related topic, I supervised the thesis work of two undergraduate students on semileptonic decays of B mesons in P-wave D mesons.

2012-2014: performed the measurement of  $\chi_b$  meson production and spectroscopy in Upsilon gamma final states by using LHCb data, together with colleagues from CERN and Moscow. PhD thesis supervised.

2014-2017: developed, in collaboration with a colleague at LAL, a post-doc in Santiago, and three PhD students a novel technique to measure semi-tauonic decays of  $B^0$  mesons with LHCb data, where the tau decays in 3 pions and a neutrino. Measured the branching fraction of the  $B^0 \rightarrow D^* \tau^+ \nu_\tau$  decay with precision comparable to the world average, showing that, contrary to initial expectations, these studies can be successfully performed in a hadron collider environment. Wrote two LHCb papers, published in PRL and PRD and both mentioned as editors' choices; presented the results at international conference and seminar.

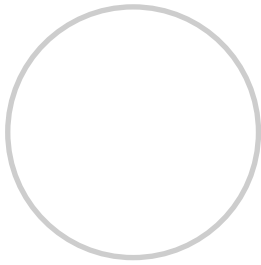
2018-2021: collaborating in TimeSpot, a project financed by a competitive INFN grant, to build a demonstrator of a vertex detector using time-sensitive solid-state sensors, to be used in future experiments. Leader of the Ferrara group, working on device simulation, characterisation and analysis of test beam data.

## SELECTED PAPERS

[a complete list of publications is available at <https://inspirehep.net/authors/1015512>]

1. T. Boccali et al, [Extension of the INFN Tier-1 on a HPC system](#), EPJ Web Conf. 245 (2020), 09009
2. C. Biscarat et al, [New developments in cost modeling for the LHC computing](#), EPJ Web Conf. 245 (2020), 03014

3. C. Bozzi, S. Ponce, and S. Roiser, [The core software framework for the LHCb Upgrade](#), EPJ Web Conf. 214 (2019), 05040
4. C. Bozzi and S. Roiser, [Towards a computing model for the LHCb Upgrade](#), EPJ Web Conf. 214 (2019), 03045
5. C. Biscarat et al, [System performance and cost modelling in LHC computing](#), EPJ Web Conf. 214 (2019), 03019
6. J. Albrecht et al (HSF Software Foundation Collaboration), [A Roadmap for HEP Software and Computing R&D for the 2020s](#), Comput.Softw.Big Sci. 3 (2019) 1, 7
7. The LHCb Collaboration, [Computing Model of the Upgrade LHCb experiment Technical Design Report](#), CERN-LHCC-2018-014, LHCb-TDR-018, May 2018
8. S. Roiser and C. Bozzi, [The LHCb Software and Computing Upgrade towards LHC Run 3](#), J.Phys.Conf.Ser. 1085 (2018) 3, 032049
9. The LHCb Collaboration, [Upgrade Software and Computing Technical Design Report](#), CERN-LHCC-2018-007, LHCb-TDR-017
10. C. Bozzi and S. Roiser, [The LHCb software and computing upgrade for Run 3: opportunities and challenges](#), J.Phys.Conf.Ser. 898 (2017) 11, 112002
11. Y. Amhis et al (HFLAV collaboration), [Averages of  \$b\$ -hadron,  \$c\$ -hadron, and  \$\tau\$ -lepton properties as of summer 2016](#), Eur.Phys.J.C 77 (2017) 12, 895
12. R. Aaij et al (LHCb Collaboration), [Measurement of the ratio of the  \$B^0 \rightarrow D^{\*-} \tau^+ \nu\_\tau\$  and  \$B^0 \rightarrow D^{\*-} \mu^+ \nu\_\mu\$  branching fractions using three-prong  \$\tau\$ -lepton decays](#), Phys.Rev.Lett. 120 (2018) 17, 171802
13. R. Aaij et al (LHCb Collaboration), [Test of Lepton Flavor Universality by the measurement of the  \$B^0 \rightarrow D^{\*-} \tau^+ \nu\_\tau\$  branching fraction using three-prong  \$\tau\$  decays](#), Phys.Rev.D 97 (2018) 7, 072013
14. C. Bozzi, [Recent results from LHCb on semileptonic decays of  \$b\$ -hadrons](#), PoS EPS-HEP2017 (2017), 206
15. R. Aaij et al (LHCb Collaboration), [A precise measurement of the  \$B^0\$  meson oscillation frequency](#), Eur.Phys.J.C 76 (2016) 7, 412
16. R. Aaij et al (LHCb Collaboration), [Study of  \$\chi\_b\$  meson production in  \$pp\$  collisions at  \$\sqrt{s}=7\$  and  \$8\$  TeV and observation of the decay  \$\chi\_b\(3P\) \rightarrow Y\(3S\)\gamma\$](#) , Eur.Phys.J.C 74 (2014) 10, 3092
17. J. P. Lees et al (Babar Collaboration), [Study of  \$B \rightarrow X\_{ij} l \nu\$  decays in  \$BB\(\bar{B}\)\$  events tagged by a fully reconstructed  \$B\$ -meson decay and determination of  \$|V\_{ub}|\$](#) , Phys.Rev.D 86 (2012), 032004



## Luciano Gaido

### WORK EXPERIENCE

[ 01/03/2019 – Current ]

#### **Director of technology (dirigente tecnologo)**

##### ***INFN - Italian Institute for Nuclear Physics***

**City:** Torino

**Country:** Italy

National coordinator of the INFN participation to the following H2020/Horizon Europe projects:

- Skills4EOSC (2022 - ongoing): the main goal is to advance Open Science skills by unifying the current training landscape into a common and trusted pan-European ecosystem, closing the three gaps identified in the EOSC Strategic Research and Innovation Agenda (SRIA) in relation to OS competences
- EGI-ACE (2021 - ongoing): the main goal is to provide capacity (CPU, GPU and storage resources) as well as cloud services to a vast variety of user communities in EOSC
- EOSC Future (2021 - ongoing): this is the new EC flagship project for the EOSC, follow-on of EOSC-hub. Personal contribution to the activities related to the onboarding of resources into the EOSC catalogue
- EOSC-Pillar (2019 - 2022): this project aims at supporting the connection of national initiatives and institutions with the EOSC; coordinator of two tasks concerning the consolidation of national initiatives and the procedures for integrating services

Member of the Task Force "Compliance Monitoring and Rules of Participation" of the EOSC Association (2021- ongoing).

Contributor to the activities of Spoke0 of the Italian National Research Center for High Performance Computing, Big Data e Quantum Computing (ICSC) established within the PNRR and funded by the Next Generation EU programme.

[ 01/01/2006 – 28/02/2019 ]

#### **Senior technologist (primo tecnologo)**

##### ***INFN - Italian Institute for Nuclear Physics***

**City:** Torino

**Country:** Italy

Head of the Computing and Network Service at INFN-Torino (2006-2010).

Contributor to the following EC-funded and national projects on distributed computing:

- EGEE-II (2006-2008)
- EGEE-III (2008-2010)
- EGI-InSPIRE (2010-2014)
- EGI-Engage (2015-2017)

The main achievements were the implementation of the European distributed Grid Infrastructure and the setting up and operation of the Regional Operations Centers (ROCs) for this infrastructure. He was the coordinator of the Italian ROC.

In EGI\_Engage he was the INFN national coordinator.

These activities were strongly connected to, and complemented by, the INFN-GRID project (2001-2010), which promoted and coordinated the provisioning of INFN computing and storage resources (one Tier-1 and 9 Tier-2 centers) for the LHC and other experiments; in this project he was responsible of the operations.

At national level he was the technical coordinator of IGI, the Italian Grid Infrastructure (2010-2014), the evolution of INFN-GRID, which included services and resources delivered by many different Italian academic and research institutions (up to about 50 sites).

Then he contributed to various H2020 projects on Cloud Computing:

- INDIGO-DataCloud (2015-2017): the main outcome was the development of cloud services to implement a federated hybrid Cloud infrastructures. He was responsible of the project management
- EOSC-HUB (2018-2021): this was the first EC flagship project implementing the European Open Science Cloud. He contributed to the activities concerning the definition of the strategy and the onboarding of resources into the EOSC catalogue. He was also the national responsible for the INFN participation to this project.

At national level he was the technical coordinator of the Open City Platform project (2014-2018), funded by the Italian Ministry of Education, University and Research (MIUR), which aimed at supporting Public Administrations to implement and adopt cloud services in the framework of actions related to Smart Cities.

Member of the INFN national Computing and Network Committee (2006-2010) and member of the Executive Board at the EGI Foundation (2013-2017).

[ 2019 – Current ] **Director of technology**

**University of Torino**

**City:** Torino

**Country:** Italy

Lectures on "IT methods for biomedical applications" at the Specialization School on Medical Physics

[ 01/09/1991 – 31/12/2005 ] **Technologist**

**INFN - Italian Institute for Nuclear Physics**

**City:** Torino

**Country:** Italy

Head of the Computing and Network Service at INFN-Torino (1999-2005).

Contributor to the following EC-funded and national projects on distributed computing:

- European DataGrid - EDG (2001-2004)
- European Grid for E-science - EGEE (2004-2006)

The main goal of these projects was the development of Grid middleware to support the computing and storage demand of some international well structured user communities such as High Energy Physics, Earth Observation and Biology. His main contributions concerned the coordination of the INFN-Torino developers group (main product: DGAS accounting system) and the set up and operation of a testbed to validate the middleware components and services developed within these projects.

Before these projects he contributed to various pilot projects concerning network services at Local, Metropolitan and Wide Area Networks (1992-2000).

Member of the INFN national Computing and Network Committee (2001-2005).

## EDUCATION AND TRAINING

[ 1988 ] **Master's degree in Physics**

**Torino University** [www.unito.it](http://www.unito.it)

**Address:** Torino, Italy

**Field(s) of study:** Particle physics

**Final grade:** 110/110 cum laude

**Thesis:** Montecarlo simulation of a deep inelastic scattering experiment at CERN, prof. M.I. Ferrero

## LANGUAGE SKILLS

**Mother tongue(s):** Italian

**Other language(s):**

**English**

**LISTENING C1 READING C2 WRITING C2**

**SPOKEN PRODUCTION C1 SPOKEN INTERACTION C1**

**Spanish**

**LISTENING B1 READING B2 WRITING B1**

**SPOKEN PRODUCTION B1 SPOKEN INTERACTION B1**

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**DIGITAL SKILLS**

Grid Computing | Cloud Computing | Microsoft Office (Word & Excel), Microsoft PowerPoint, Microsoft Project, Internet, Outlook | Program management | Distributed Computing



# Curriculum Vitae

## Personal information

First name(s) /  
Surname(s) Barbara Martelli

## Occupational field **Information Technology Research**

### Work experience

Dates 2020 - Current

Occupation or position held **Senior Technologist**

Main activities and responsibilities

- Head of the EPIC Cloud (Enhanced PrIvacy and Compliance Cloud), the ISO/IEC 27001 27017 27018 certified Information Security Management System which covers the INFN Cloud region dedicated to projects with high security and privacy requirements (mostly clinical and genetic data). Among them, it is worth mentioning the European IMI2 project HARMONY (Healthcare Alliance for Resourceful Medicines Offensive against Neoplasms in hematology), the Italian Ministry of Health association Alleanza Contro il Cancro, and its Health Big Data project, the INFN project PLANET and several scientific collaborations with universities and IRCCS.
- In the context of the project DARE (DigitAI Lifelong pRevEntion), founded by the Italian Ministry of Health as complimentary plan to the National Recovery and Resilience Plan, I am leader of WP3 “Interoperability Governance”. The objective of the WP is to develop and implement novel digital approaches to prevent occupational and environmental risks and promote population health.
- In the context of ICSC (Centro Nazionale HPC, Big Data e Quantum Computing), founded by the Italian National Recovery and Resilience Plan, Spoke 8 “In silico medicine and omics data” I am leader of WP3 “Integrated digital data flow between clinics and HPC centres and Easy-to-use GUI for HPC solvers (hiding complexity for ultimate users)”.
- Member of the Executive Board of the Health Big Data project <https://www.alleanzacontroilcancro.it/progetti/health-big-data> founded by the Italian Ministry of Health. One of the main contributors to the HBD Big Data Platform Working Groups (WG4, WG5) and in the Security and Privacy Working group (WG7).
- INFN deputy member in the ART-ER Scientific Committee.
- Head of the ICT unit at INFN-TTLab (the INFN industrial research lab in the Emilia Romagna Region). In this role, I contribute to various regional activities and projects in the context of the Service Innovation Clust-ER, the Health Clust-ER, and the BI-REX Competence Centre. Some of the most relevant projects include SmartChain to study of blockchain-based solution for the supply chain; WeLight <https://www.welight.info/> to study wearable sensors to enhance athletes’ performances through data collection and analysis in cloud.
- External referee for the BI-REX project SS4SP (Security Platforms for connected IoT in production lines) <https://bi-rex.it/ss4sp-il-progetto-per-la-cybersecurity-co-finanziato-da-bi-rex/> .
- INFN-CNAF contact person for CC3M and CNTT (the INFN committees coordinating Technology Transfer, Social Engagement, and Innovation activities). In this role I am referee of various project, including Open4BC <https://github.com/Open-ForBC/about> which aims to develop a software platform to ease the use of Graphical Processing Unit in an efficient

manner, allowing effortless partitioning of GPUs in the context of parallel computation (Artificial Intelligence, Machine Learning).

- Member of the INFN National Committee of Project Management, aimed at introducing and consolidating the adoption of correct project management techniques at INFN.
- From 2019 to 2021, coordinator of the CNAF Big Data Platform project for the architectural definition and proof of concept of a data-centre-wide scalable and interoperable platform for log collection and analysis.
- Teacher in several technological courses including “Computing Methods for Biomedic Applications” – PhD specialization school in medical physics, Torino University; “Introduction to Big Data and Artificial Intelligence” – IFOA (Istituto Formazione Operatori Aziendali) in the context of the “Big Data Lab” project, founded by FSE PO 2014-2020 Emilia-Romagna; “Big Data Management and Infrastructures” – INFN National Training Plan; “Orchestration of computing resources” and “Advanced Distributed File Systems” – 19th Bologna Winter School Big Data and Bioinformatics 2018 - International Master in Bioinformatics and Interdepartmental Centre "Luigi Galvani" of the University of Bologna.
- Performed several outreach activities including “Coding School” - AggiornaMenti <http://aggiornamenti.to.infn.it/>; “Create knowledge and value from complexity. Reusing Big Data technologies developed for fundamental research” - Web Marketing Festival <https://www.webmarketingfestival.it/2020/programma/wmf2020-martelli>; “From CERN to School: Data Networks and Computing Capacity: the research in the near future” –Fondazione Golinelli <https://www.fondazionegolinelli.it/it/area-ricerca-alta-formazione/dal-cern-alla-scuola>; “The ISO/IEC Information Security Management System at INFN-CNAF” – CERN Seminars <https://cseminar.web.cern.ch/2021/1013>

Name and address of employer	INFN – CNAF, Viale Berti Pichat 6/2, Bologna, IT
Type of business or sector	Technological Research in the field of Information Technology
Dates	2006 - 2020
Occupation or position held	<b>Technologist</b>
Main activities and responsibilities	<ul style="list-style-type: none"> <li>▪ In the period 2009-2012 I've been leading CNAF group of the INFN Information System and was one of the main contributors on the feasibility study, proof of concept and execution of the migration of the Information system from a legacy HW/SW platform to a commodity, low-expense open-source platform. Carrying out this task I gained experience in the field of business processes, application analytics and enterprise data management.</li> <li>▪ In the period 2012-2019 I've been contributing to the study, definition, design, and deployment of the distributed data management infrastructure for the Extreme Energy Events (EEE) experiment (INFN and Centro Ricerche Enrico Fermi).</li> <li>▪ I participated to Open City Platform (OCP), a project founded by the Italian Ministry of University and Research with the main goal of developing an open-source Cloud platform for the Italian public administrations. In OCP I was responsible for the Big Data infrastructure definition and deployment.</li> </ul>
Name and address of employer	INFN – CNAF, Viale Berti Pichat 6/2, Bologna, IT
Type of business or sector	Technological Research in the field of Information Technology

Dates	2002 - 2006
Occupation or position held	<b>Research Fellow</b>
Main activities and responsibilities	<ul style="list-style-type: none"> <li>▪ Performed research activities within the Word Wide LHC Computing Grid (WLCG) project, in the fields of distributed data management and distributed computing for the CERN Large Hadron Collider experiments.</li> <li>▪ Responsible for the INFN WLCG-Tier1 database management and operations. INFN scientific contact person within the European LCG-3D project (Distributed Deployment of Databases).</li> </ul>
Name and address of employer	INFN – CNAF, Viale Berti Pichat 6/2, Bologna, IT
Type of business or sector	Technological Research in the field of Information Technology

## Education and training

Dates	2022
Title of qualification awarded	Project Management Professional (PMP)® certification.
Principal subjects/occupational skills covered	Project Management techniques
Name and type of organisation providing education and training	Project Management Institute
Certificate verification link	Certificate n. 3204886 Verification link: <a href="https://www.credly.com/badges/5134ac8c-3e93-4adf-9d87-d7e83134c02c?source=linked_in_profile">https://www.credly.com/badges/5134ac8c-3e93-4adf-9d87-d7e83134c02c?source=linked_in_profile</a>
Dates	2018
Title of qualification awarded	CQI and IRCA Certified ISO/IEC 27001:2013 Lead Auditor
Principal subjects/occupational skills covered	Information Security Management Systems
Name and type of organisation providing education and training	British Standard Institution (BSI)
Certificate verification link	ISO/IEC 27001 Lead Auditor Certification. Certificate n. ENR-00577024 issued by British Standard Institution.
Dates	2002
Title of qualification awarded	Master's Degree in Computer Science 110/110 cum laude
Principal subjects/occupational skills covered	Computer Science
Name and type of organisation providing education and training	University of Bologna

