Lorenzo Rinaldi

Working Address:

Physics and Astronomy Department

EDUCATION

• 2006: PhD in Physics, University of Bologna

• 2002: Master Degree in Physics (score 109), University of Bologna

CURRENT POSITIONS

• Since Feb 2019: Associate Professor, Physics and Astronomy Dep., Bologna University

• Since 2016: "Incarico di Ricerca Scientifica", National Institute for Nuclear Physics (INFN)

• Since 2008: CERN Collaborator, member of the ATLAS Collaboration, Experimental Physics Dept., European Organization for Nuclear Research, Geneva (CH)

PREVIOUS POSITIONS

• From Feb 2016 to Jan 2019: Senior Researcher [RTD Art. 24 co. 3 lettera b) L. 240/2010], Physics and Astronomy Dep., Bologna University

• 2014: Qualification for the role of Associate Professor (Sector 02/A1 Experimental Physics of Fundamental interactions)

• Apr. 2014 - Jan 2016: Junior Researcher [RTD Art. 24 co. 3 lettera a) L. 240/2010], Physics and Astronomy Dep., Bologna University

• From 2012 to 2014: Lecturer, Bologna University

• Jul 2010 - June 2012: Research Associate (Assegno di Ricerca, art. 51, comma 6, della Legge n. 449/1997), INFN-CNAF

• Jan 2008 – Dec 2009: Research Associate (Assegno di Ricerca, art. 51, comma 6, della Legge n. 449/1997), INFN-CNAF

• Sep 2006 – Dec 2007: Post-doc (DESY Fellowship), Hamburg;

TEACHING ACTIVITIES

• Since 2018: Co-lecturership in Software and Computing for Nuclear and Subnuclear Physics (Physics Master degree)

• Since 2017: Lectureship in General Physics (Computer Engineering)

• Since 2014: Co-lectureship in General Physics (Physics Degree)

• From 2012 to 2014: Lectureship in General Physics (Management Engineering and Land and Environmental Engineering)

• From 2010 to 2014: Tutorship in General Physics and Electronic Laboratory

SCIENTIFIC COLLABORATION RESPONSIBILITIES

• Since 2019: member of the HEPiX team for HEP experiment benchmarking studies

• Since 2017: member of the INFN-CNAF User Support team

• Since 2010: member of the Italian Computing User Support team of the ATLAS experiment.

• Since April 2014: management and coordination of the ATLAS Conditions Database distribution on Grid infrastructures and on the ATLAS HLT farm

• Since 2013: in charge of the Tier-3 computing farm of the INFN-Bologna for the computing activities of the ATLAS experiment;

• From December 2010 to June 2012: Operation Manager of the INFN-CNAF Tier-1;

• From July 2010 to June 2012: ATLAS Grid Software Installation Manager (deputy);

• From 2008 to 2012: contact-person for the ATLAS experiment at the Italian Tier-1 Computing centre at INFN-CNAF

• 2007: Internal member of the ZEUS Experiment Editorial Board;

• 2006-2007: ZEUS EventDisplay team coordinator;

• 2003-2007: ZEUS shift leader during data taking operations;

• 2003-2005: Monitoring and maintenance of the Forward Muon Spectrometer (FMUON) of the ZEUS experiment

GRANTS

• Dec 2017: Eligible for the annual research funding program (Legge 11 dicembre 2016, n.232, art.1, commi 295-302); Scientific production score: 100

SUMMARY OF RESEARCH ACTIVITY

I started my research activity at the Bologna University in 2002, with the preparation of my Physics Master Degree thesis, on the production of the W boson in Deep Inelastic Electron-Proton Scattering within the ZEUS Experiment at the HERA collider (Desy, Hamburg).

From 2003 to 2005 I was enrolled as PhD student in Physics at Bologna University, where my research activity focused on the study of the leading-proton production in DIS and on the monitoring and maintenance of the ZEUS Forward Muon Spectrometer.

After obtaining the PhD title, from 2006 to 2007 I held a Post-Doc position (Fellowship) at the DESY laboratory, analysing the data collected by the ZEUS experiment, for the Diffractive and leading Baryon Physics Group, participating to the data-collection activities and coordinating the ZEUS Event Display team.

From 2008 to 2009 and from 2010 to 2012 I held a Research Associate position (Assegno di Ricerca) at the INFN CNAF, where the INFN Tier-1 computing centre is hosted. I carried out a technological research for the optimisation of the production and analysis activities of the ATLAS experiment at the CNAF Tier-1 and INFN-

BOLOGNA Tier-3 computing facilities. I was also involved in the management of ATLAS software distribution and installation on the Grid infrastructure. In the first six months of 2010 I was visiting collaborator at CERN, where I contributed to the development of the ATLAS Site Status Board, used for the monitoring of the Grid sites.
Since 2014, I have been working on the development of new computing technologies for the optimisation of the access to the LHC data using the Grid and Cloud Computing approach, in collaboration with the INFN Tier-1 user-support team. I have been coordinating the ATLAS Conditions Database distribution on the Offline and Online computing platforms and I have been contributing to the development of a new Conditions Database framework for the LHC run-3 data taking period.
From 2016 to 2019, I have been developing tracking and trigger algorithms on General Purpose computing on Graphics Processing Units (GPGPU), and integrating such pattern recognition techniques within the software-framework of the ATLAS trigger system.
Since 2019, I have been working with the HEPiX benchmark group to the development of a fast benchmark procedure to evaluate the performance of a provided job slot.
Since 2019, I have been co-supervising the activities of the PhD students on the development of Operational Intelligence tools for Distributed Data Management, using novel approaches based on Machine/Deep learning techniques.

CONFRENCES AND WORKSHOPS

• SIF - LXXXIX Congresso Nazionale Parma (Italy) 2003 Sept 17th - 22nd
Talk: “Produzione di protoni leading in collisioni DIS e+ p ad HERA”
• LOW-X 2005 Sinaia (Romania) 2005 June 29th July 2nd;
Talk: “Leading Baryon production at HERA”
• DIFFRACTION 2006 Milos (Greece) 2006 September 5th-10th ;
Talk: “Leading baryon production in ep collisions”
Proceedings: PoS DIFF2006, 008
• SMALL-X and DIFFRACTION FERMILAB - Batavia (USA) 2007 March 28th -31st ;
Talk: “Leading baryon production in ep collisions”
• LOW-X 2007 Helsinki (Finland) 2007 August 29th September 2nd,
Talk: “Leading Baryon production at HERA”
• DIS 2008 Londra (United Kingdom) 2008 April 20th -27th ;
Talk: “Leading Proton production at HERA”
Proceedings: 10.3360/dis.2008.66
• SIF - XCV Congresso Nazionale Bari (Italy) 2009 September 28th – October 2nd ;
Talk: “Descrizione delle attività di calcolo dell’esperimento ATLAS nei siti italiani”
• Stato e Prospettive del Calcolo Scientifico (Mini-Workshop Commissione Calcolo e Reti INFN) Laboratori Nazionali di Legnaro (Italy) 2011 February 16th -28th ;
Talk: “ Esperienza di calcolo nel primo anno di presa dati in ATLAS”
• CHEP2012 New York (USA) 2012 May 21st -25th

Poster: “ATLAS computing activities and developments in the Italian Grid cloud”;
Proceedings: Journal of Physics, Conference Series, 396 (PART 4), art. no. 042052, (2012)

• TIPP14 Amsterdam (The Netherlands) 2014 June 2nd - 6th

Poster: “GPU for triggering in High Energy Physics”
Proceedings: PoS TIPP2014, 408

• GPU Computing in HEP Pisa (Italy) 2014 September 10th - 12th ;

Talk: “GPGPU for track finding and triggering in High Energy Physics”;
Proceedings: http://arxiv.org/abs/1507.03074, DESY-PROC-2014-05

• Workshop della Commissione Calcolo e Reti dell’INFN Frascati (Italy) 2015 May 25th -29th ;

Talk: “Triggering Events with GPUs at ATLAS”

• CHEP2016 San Francisco (USA) 2016 October 10th -14th

Talk: Collecting conditions usage metadata to optimize current and future ATLAS software and processing
Proceedings: L Rinaldi et al 2017 J. Phys.: Conf. Ser. 898 042028
Posters: First use of LHC Run 3 Conditions Database infrastructure for auxiliary data files in ATLAS, Elastic extension of a local analysis facility on external clouds for the LHC experiments

• CHEP2018 Sofia (Bulgaia) 2018 July 9th -13th

Talk: Conditions evolution of an experiment in mid-life, without the crisis (in ATLAS)
Poster: Optimizing access to conditions data in ATLAS event data processing