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Born: 4 October 1976—Roma, Italy
Nationality: Italian

Current position

PhD Student, Physics Institut, Prof. Gregor Herten Group, Freiburg University, Germany

Areas of specialization

Particle physics, Data Analysis, Analysis Software Development, Supersymmetry

Areas of competence

Software Development, IT, Particle detector physics

Education

Oct 2006 - present
PhD in Particle Physics
"Looking for signatures of Physics Beyond the Standard Model in ATLAS with an Automated Model-Independent General Search"
Advisors: Prof. Gregor Herten, Dr. Sascha Caron, Dr. Renaud Brunelière (Freiburg)
Albert Ludwig Universitaet, Freiburg, Germany
expected date: August 2010

2003-2006
MSc (*Laurea Magistrale*) in Nuclear and Subnuclear Physics (highest honours)
"Study of the ATLAS MDT Muon Chambers calibration constants with data from a testbeam"
Advisors: Prof. Toni Baroncelli (INFN), Prof. Filippo Ceradini (Roma Tre)
Mark: 110/110 *"magna cum laude"*
Università Roma Tre, Roma, Italy

2000-2003
BSc (*Laurea*) in Physics (highest honours)
'Multithreading for the ATLAS Data Acquisition System Data Flow'
Advisors: Prof.sa Fernanda Pastore (RomaTre), Dr. David Francis (CERN), Dr. Luis Tremblet (CERN)
Mark: 110/110 *"magna cum laude"*
Università Roma Tre, Roma, Italy

Work Experience

2010-now **CERN**, **European Organization for Nuclear Research**, Geneva, Switzerland
Fellow Researcher
Working on the upgrade and operation of the Data Aquisition system (DAQ) of the ATLAS experiment. And working on data analysis within the ATLAS Supersymmetry Working Group.

2009-2010 "**Albert Ludwig" Freiburg University**, Freiburg, Germany
Software Developer
Working in the Grid group, developing a web dashboard to monitor Freiburg BFG (*Black Forest Grid*) machines

2006-2008 "**Albert Ludwig" Freiburg University**, Freiburg, Germany
Teaching Assistant in Particle Physics
Teaching at "Advanced Physics Lab Class" for students of Physics

Jun-Jul 2003 **CERN - ATLAS TDAQ**, Geneva, Switzerland
Internship in Data Acquisition
Summer Internship, where I worked in the Trigger & Data Acquisition (TDAQ) Group of the ATLAS Experiment, on a Multithreading project for the Data Flow software.

Jul-Aug 2002 **Fraunhofer-Institut für Photonische Mikrosysteme IPMS**, Dresden, Germany
Internship in Optics
Summer Internship, where I conceived and realized a microspectrometer for a fair, to show an innovative micro-electro-mechanical-optical device built at the Institute.

Jun-Jul 2001 **CNRS-LTHE** , Grenoble, France
Internship in Geophysics
Summer Internship (as "Stage de Licence"), where I worked on the field with the equipe from the Institute and other students, making measures of erosion and water infiltration on the marnes of Digne, France.

1999-2000 **WWF "Macchiagrande" Protected Area**, Fregene, Italy
Civil Service (at the place of the Army Service)
Working in the protected area taking care of the maintenance of the area, protecting the environment and the wild animals, and accompanying the visitors of the park.

1995-1999 Rome, Italy. Waiter in several restaurants in Rome.

Grants

2003 INFN Grant for Thesis abroad.

2000-2001 Erasmus studies at *"Université Joseph Fourier"*, Grenoble, France.

Languages

Italian (native speaker)
English (fluent)
French (fluent)
German (basic)

Skills

1. Programming Languages

Python
Very good knowledge,
Used in the day-by-day work. Multiparadigm programming. Very good knowledge not only of the language itself, but also of the standard library and external libraries, and experience with many third-part extensions (like distutils, vpython, beautifulsoup, ...). Integration of Python with C++ custom code. Started building web applications and web services with the CherryPy framework, also together with the Qooxdoo Javascript framework as front-end.

C++
Very good knowledge,
Used in the day-by-day work. Not only the language itself, but also the STD library and external libraries, like Boost. Intergation of C++ code with Python.

Fortran
Good knowledge,
Used during the MSc Thesis work, to perform data analysis and toy-MonteCarlo programs.

JavaScript
Basic knowledge,
started building web application with the Qooxdoo Javascript framework as front-end, together with CherryPy as server-side back-end.

Markup languages: **XML**, **JSON**, **Wiki**, **HTML+CSS**. Good knowledge

Typesetting languages: **LaTeX**, **XeTeX**. Very good knowledge

BASIC. Good *old* knowledge

2. Physics Packages

ROOT Analysis Framework
Very good Knowledge
good knowledge of ROOT Classes
day-by-day usage via CINT, PyROOT or compiled C++.

ATLAS Athena Framework
Very good knowledge, day-by-day use.

LabView, **TestPoint**, **Origin**
Basic knowledge

3. Operating Systems

Linux
Very good knowledge, also as *Administrator* (especially SLC, RedHat, Debian)

Windows
Very good knowledge, also as *Administrator*: Vista, XP, 9X, 3.X, MS-DOS

Apple Os X
Good knowledge: Snow Leopard

4. Other IT-related skills

Good knwoledge of **GRID** usage, especially with DQ2, Ganga, Panda

Good knowledge of build tools like **make**, **autoconf**, **distutils** and basic knowledge of the **CMT**

Very good knowledge of **Subversion** version control system, also as *Administrator* (in Freiburg I'm SVN Admin since 3 years)

Very good knowledge of the **Eclipse IDE** as multi-language development framework, also of many of its extra packages

Good Knowledge of **AFS file system** and basic knowledge of **Kerberos**

CMS – Content Management Systems: Good Knowledge of **Joomla 1.5** administration and customization. Basic knowledge of **Wordpress2**

OS and Computer Architecture: Good Knowledge of computer architecture theory and Operating System architectures, and implications in software programming techniques (pipelines, buffers, caches, I/O, multithreading, ...)

Good knowledge of the **Hardware** Market, and good skills in assembling machines

Service work in Experiments and Collaborations

ATLAS Experiment

Data Analysis: **Supersymmetry Working Group** Working on data analysis, on exploring and implementing analysis strategies and on data files production
Development & Upgrade Working in the DAQ group, on the upgrade of the configuration DB system
Detector Operation Shifter in the control room, at the Muon System, DAQ and Run Control desks
Software Framework Taking part in code testing, and shifter for the build test system (RTT)
Documentation Responsible person for a part of the documentation of the ATLAS data-format
Public Relations Official ATLAS Guide, escorting VIP visits to the ATLAS cavern

Publications & talks

1. Peer-reviewed Journal papers

"WatchMan Project - A Python CASE framework for High Energy Physics data analysis in the LHC era"
R.M.Bianchi, R.Brunelière
submitted to "Journal of Computational Science", Elsevier

"WatchMan Project - Computer Aided Software Engineering applied to HEP Analysis Code Building for LHC"
R.M.Bianchi, R.Brunelière, S.Caron
Proceedings Of Science: PoS(ACAT2010)061

"Discovery potential of Supersymmetry and Universal Extra Dimensions in the ATLAS experiment at the Large Hadron Collider at CERN"
R.M.Bianchi
Proceedings Of Science: PoS(HCP2009)066

"Study of the ATLAS MDT Spectrometer using High Energy CERN combined Test beam Data",
C. Adorisio , *et al.*
Nuclear Instruments and Methods A: A598:400-415,2009

2. Peer-reviewed CERN public notes

"Discovery Potential of SUSY and UED in ATLAS"
R.M.Bianchi, on behalf of the ATLAS Collaboration
Poster for Hadron Collider Physics Symposium (HCP) 2009 in Evian
CERN ATLAS Public: ATL-PHYS-SLIDE-2009-361

"Prospects for SUSY and UED discovery based on inclusive searches at 10 TeV centre-of-mass energy with the ATLAS detector"
R.M.Bianchi, R.Brunelière, S.Caron, J.Dietrich, M.Rammensee, Z.Rurikova
CERN ATLAS Internal Note: ATL-PHYS-INT-2009-060, ATL-COM-PHYS-2009-302
CERN, Geneva, June 2009
This internal note became ATLAS PUBLIC: ATL-PHYS-PUB-2009-084

"Prospects for Supersimmetry Discovery Based on Inclusive Searches with the ATLAS detector at the LHC (Long Version)"
J.Abdallah, F.Ahles, S.Asai, J.Asal, A.J.Barr, **R.M.Bianchi**, *et al.*
CERN ATLAS Communication: ATL-COM-PHYS-2009-261
CERN, Geneva, May 2009
published within the CSC Book "Expected Performance of the ATLAS Experiment, Detector, Trigger and Physics", CERN-OPEN-2008-020, Geneva, 2008.

"Study of MDT calibration constants using H8 testbeam data of year 2004",
Baroncelli, T, **R.M.Bianchi**, S.Di Luise, A.Passeri, F. Petrucci, L.Spogli
CERN ATLAS Public Note: ATL-MUON-PUB-2007-004. Jul. 2006

3. **ATLAS internal notes**

"Usage of the Distributed Analysis Tools in The ATLAS Supersymmetry Working Group",
Barr, A; **R.M.Bianchi**, M.Biglietti, O.Brandt, S.Caron, G.Carlino, A.Christov, *et al.*
CERN ATLAS Internal Note: ATL-COM-SOFT-2007-011
CERN, Geneva, Aug. 2007

Talks in international conferences

8-11.07.2010 **EuroSciPy 2010** - 3rd International Conference on Python in Science
"WatchMan Project - A Python CASE framework for High Energy Physics data analysis in the LHC era"
Talk about my own work
Paris, France

22-27.02.2010 **ACAT 2010** - 13th International Workshop on Advanced Computing and Analysis Techniques for Physics,
"WatchMan Project: Applying Computer Aided Software Engineering to HEP Analysis Code Building for LHC"
Talk about my own work
Jaipur, India

16-20.11.2009 **Evian HCP 2009** - Hadron Collider Physics Symposium
"Discovery Potential of SUSY and UED in ATLAS"
Poster on behalf of the ATLAS Collaboration
Evian, France

Attended workshops & conferences

2-4.02.2010 *Physics for Health in Europe Workshop*,
CERN

24.04-01.05.2009 *1st International Workshop On Hadron Beam Therapy of Cancer*,
Erice, Sicily (Italy)

Teaching

2009 Supervisor of a CERN Summer Student
project: ATLAS data analysis
CERN, Geneva, Switzerland

2008 Assistant for the 4th year Physics Laboratory class: *Subnuclear Physics*
Albert Ludwig Universitaet, Freiburg, Germany

2007 Assistant for the 1st year Physics Laboratory class: *Mechanics and Electromagnetism*
textitAlbert Ludwig Universitaet, Freiburg, Germany

Scientific dissemination activities

2010-2011 Official guide for VIP visits at the ATLAS experiment cavern at CERN.

2007-2008 Guide at "Physics Open Day" for High School students at Freiburg University (Germany)

2004-2005 Assistant at CERN/INFN "Masterclasses" for High School students, Rome (Italy)

Training

1. Academic training

20-22.01.2010 *Physics and Analysis at a Hadron Collider*
by Dr. Douglas Glenzinski (FNAL), CERN

11-15.05.2009 *Lectures on Multivariate Analysis Techniques*,
by Helge Voss,
Freiburg University (Germany)

9-10.02.2009 *Understanding Cross Sections at the LHC*
by Dr. Stephen Mrenna (Fermi National Accelerator Laboratory, USA),
CERN

2-5.02.2009 *Statistical Techniques for Particle Physics*
by Dr. Kyle Cranmer (CERN-PH),
CERN

21-23.01.2009 *The Opposite Ends of Supersymmetry and their Implications for the LHC*
by Dr. Wells, James (CERN-TH),
CERN

2. Technical training

7.12.2009 *"Developing Secure Software"* , CERN

6-7.10.2009 CERN openlab / Intel Computer *"Architecture and Performance Tuning Workshop"*

Summer schools

12-22.08.2008 *Fermilab/CERN Hadron Collider Physics Summer School 2008*
Fermilab, Chicago, USA

28.08-08.09.2006 *2nd CASPUR Summer School on Advanced Computing*
Castel Gandolfo, Italy

12-20.06.2005 *NUFACT 05 Summer Institute on Neutrino Factories and Superbeams*
Capri, Italy

17-21.05.2004 *LNF Spring School "Bruno Tuscheck" in Nuclear, Subnuclear and Astroparticle Physics*

LNF, Frascati (Italy)