

Curriculum vitae

PERSONAL INFORMATION **Caterina Bloise**

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Date of birth 29 July 1959 | Nationality Italy

SHORT CURRICULUM WITH **General Professional Informations**

EMPLOYMENT

January 2007 – Present **Dirigente di Ricerca**

Sector Experimental Particle Physics - Public Selection INFN 12394/07
Laboratori Nazionali di Frascati dell'Istituto Nazionale di Fisica Nucleare, Italy

June 1996 – December 2006 **Primo Ricercatore**

Sector Experimental Particle Physics - Public Selection INFN 5448/95

April 1988 – May 1996 **Ricercatore**

Sector Experimental Particle Physics - Public Selection INFN 1044/87

1986 – March 1988 **Fellowship for young researchers**

Sector Experimental Particle Physics - Public selection INFN 908/85

EDUCATION

1984 **Laurea in Physics**

Tracking calorimetry for underground experiments in particle physics
University "La Sapienza", Rome, Italy

RESEARCH FIELDS

Flavour Physics

- Lepton Flavour Violation
- Precision Measurements in hadron physics
- Standard Model precision tests
- Physics at low-energy $e^+ e^-$ colliders

Particle Detectors

- Calorimeters
- Tracking systems
- Trigger and data acquisition
- Calibration systems
- Data-Quality Control

Data Simulation, Data Analysis

- Simulation of Detector Response
- Generators of Fundamental Processes
- Data Analysis for precision measurements and searches for rare processes

Astroparticle Physics

- Cosmic muons and neutrino measurements in underground laboratories

EXPERIMENTS AND
COLLABORATIONS

- 2017 – Present [Mu2e experiment](#) at the Fermilab, Batavia, IL, USA
- 2022 – Present [aMUSE Project](#) , Horizon 2020, MSCA-RISE-2020
- 2017 – 2020 [MUSE Project](#) , Horizon 2020, MSCA-RISE-2015
- 1992 – Present [KLOE/KLOE-2 Experiment](#) at the LNF, Frascati, Rome, Italy
- 2005 – 2010 European Network [EtaMesonNet](#), Hadron Physics I3
- 1984 – 2004 [MACRO Experiment](#) at the Gran Sasso Laboratory, Assergi, AQ, Italy
- 1983 – 1991 [Nusex Experiment](#) in the Mont Blanc tunnel, Rhone-Alpes, France

SCIENTIFIC MANAGEMENT AND
COORDINATION (SELECTION)

- 2024 – Co-chair of the CERN LDG (Laboratory Director Group) panel for the assessment of sustainability of future accelerators
- 2023 – Member of the $\mu 2e$ Executive Board
- 2023 Member of the Panel for the Organization Chart of the $\mu 2e$ Operations
- 2023 Remote expert referee for the European Research Council - ERC-2023-STG
- 1997 –2022 Member in several committees for staff reasearcher and postdoc recruitment
- 2015-2018 Member of the LHCC
Committee for the Experiments at the Large Hadron Collider, LHC
Invited by : CERN Directorate
– The Committee met at CERN for one week four times per year to follow-up on the run of the experiments at the LHC. Appointed to the panel for ALICE, TOTEM and LHCf. Proposals for the upgrade and for new experiments have in-depth reviewed. Phase-II Upgrades have been scrutinized. Appointed to the panel for the TDR CMS EndCap Calorimeter, to the UCG (Upgrade-Cost-Group) for the CMS Upgrades and to the Phase-I upgrade of the ALICE TPC.
- 2017 Member of the LNF Committee for the study of DAFNE-TF
- 2009-2014 Italian Representative in P-ECFA
Plenary European Committee for Future Accelerators
Invited by: INFN Presidency
- 2008 – Present Reviewer for Physics Letter B, The European Journal of Physics C (EPJ-C), EPJ-A
- 2015 Member of the Committee for the selection of Ph.D students at the Roma–Tre University
- 2015 – Present Member of the KLOE-2 Institution Board

- 2010 –2014 Chair of the KLOE-2 Analysis Board
- 2005 –2014 Coordinator for the INFN of the KLOE2 project
- 2005 –2014 KLOE2 group leader at the INFN-LNF
- 2005 –2008 Coordinator of the European Network EtaMesonNet - Hadron Physics I3
- 2004 –2005 Member of the committee for the study of the LNF Roadmap
- 2001 –2004 Convener of the KLOE WG on neutral kaons

RESEARCH ACTIVITY SUMMARY

2017 – Present **Experimental project Mu2e at Fermilab**

- collaborating to the preparatory phase of the mu2e experiment, a very high- sensitivity search for the LFV process, $\mu \rightarrow e$ in nuclei. Background studies. Evaluation of the radiation exposure of the calorimeter readout system. Construction and test of the CsI-crystal calorimeter.

2006 – Present **Experimental project KLOE2**

- proposal [2006]; preparation [2007-2011]; running, first phase [2011;2012]. Workshop and paper with the physics program, mostly i) tests of CPT and QM with the entangled neutral-kaon pairs, ii) low-energy QCD studies with Ks, η , and η' decays, iii) $\gamma\text{-}\gamma$ physics, iv) searches in the Dark Force sector. Activity planning for the experimental project and detector upgrade. Resource management [2006-2014]. Simulation and data comparison for the machine background from intra-bunch scattering [2006-2007]. MonteCarlo development to include new interaction region, calorimeters at low angle and the Internal Tracker (IT)[2010]. Feasibility study for the measurement of the π^0 width using central apparatus and the $\gamma\text{-}\gamma$ taggers [2015-2018]. Data processing : Reconstruction and data-quality assessment for the HET (High-Energy-Tagger) (2017-2019); Data analysis : measurement of radiative Bhabha's scattering at low angle; background reduction (2019-2020) and fit procedures (2020-2023) for the measurement of the π^0 radiative width ; precision measurement of the charged kaon mass (2020-2021). Tutor of a master thesis on the charged kaon mass measurement at the "Sapienza" University, Rome (2021).

1991 – 2005 **Experimental project KLOE at LNF**

- Physics and detector studies for the experimental apparatus. Development of the Monte Carlo simulation (GEANFI) package for the experiment. Data reconstruction : development of event classification and data streaming code. Study and planning of the computing resources. Data taking, 2.5 fb^{-1} of integrated luminosity [2001-2002;2004-2006]. Quasi-online data reconstruction, data handling and monitoring. Data analysis and coordination of the WG on kaons. Reviewer of several publications. Statistical treatment of small data sample for rare decays. Among other results, precision measurements in kaon physics have been achieved, allowing a test of unitarity in the first row of the CKM matrix at 0.7 per mil level [2008]. Low-energy hadronic contribution to the anomalous magnetic moment of the muon has been obtained from independent analyses of the two-pion cross section based on events from radiative return [2006-2010].

1984 – 2004 **Experimental project MACRO at the Gran Sasso Laboratory**

- Physics and detector studies for the experimental apparatus. MACRO was a large-area, multi-purpose detector mostly to search for magnetic monopoles with sensitivity to the Parker limit and for the analysis of the cosmic ray flux, neutrinos and muons. Reconstruction and classification of the cosmic muons. Event builder for the data acquisition system. Monitoring of the tracking system. Data analyses on cosmic muons and underground neutrino interactions. Review of several publications.

PUBLICATIONS AND TALKS

More than 150 publications on refereed journals (PLB, EPJC, JHEP, among the others)
List and articles available on ORCID 0000-0002-1563-8969

More than 35 talks to international conferences, of which more than 10 were invited talks and seminars

Several Proposals and Activity Reports presented to the INFN and LNF review committees

EDUCATIONAL AND
DISSEMINATION ACTIVITIES
(SELECTION)

- 2021 Tutor of a master thesis on the charged kaon mass measurement at the “Sapienza” University, Rome
- 2016 – Present Member of the Academic Board of the Ph.D course in Physics at the Roma–Tre University
- 2010 – 2012 Director of the LNF Summer School for High-School Students
- 2005 – 2009; 2012 Tutor at the LNF Summer School for High-School Students
- 2005 – 2016 Tutor of several postdocs with research projects in hadron physics
- 2007 Supervisor of a Proposal for the European Call “FP7-People-2007-IOF”– “PHY” Panel
- 2008 Advisory Committee Member of the International CKM conference
- 2007 Organizer and Proceedings Editor of the International HADRON conference
- 2007 Chair of the International KAON conference
- 1999 Convener of the “CP-violation” session at International HEP-EPS Conference

Caterina Bloise

Rome, 19 April 2024