**Maria Enrica (Marica) Biagini**
**Laboratori Nazionali di Frascati - Istituto Nazionale Fisica Nucleare**

Marica Biagini is a senior accelerator physicist of the Accelerator Division at INFN-Frascati National Laboratories (Italy). Her main work topics are $e^+e^-$ storage rings and synchrotron light sources design, operation and commissioning, especially for lattice design and non-linear dynamic studies. She has been involved in the design, construction and operation of the DAΦNE Φ-Factory in Frascati, and in the upgrade of DAΦNE for high luminosity with the crab waist scheme. She participated to the design of the SuperB Factory and Super Tau/charm Factory projects in Frascati, as coordinator of the beam dynamics and lattice work. She is a member of the ICFA Beam Dynamics Panel and Chair of the Sub-Panel on High Luminosity $e^+e^-$ colliders. At present she is involved in the design of a muon source for a future Muon Collider.

# CV of Mario Antonelli (LNF)

Degree in Physics in “La Sapienza” (Rome), PhD in physics from the University of Milano, tracking and Kaon physics coordinator in KLOE, Kaon Physics coordinator in FlaviaNet, Particle Data Group author, physics generators convener in ECFA/DESY, ATLAS LNF Team leader

**Personal Information:**

Name: Mario Antonelli
Current position: Staff Researcher, Laboratori Nazionali di Frascati dell’INFN Work address: Via Enrico Fermi 40 Frascati (Roma) Italy c.p. 00040
Tel: +390694032728
Email: Mario.Antonelli@lnf.infn.it
Date of birth: June 2, 1968

**Employment and Education:**

2015-present: First Researcher at LNF
2001-2015: Staff Researcher at LNF
2000:2001 Post Doc Fellow at LNF
1998-2000: Research Associate, CERN
1995:1998: Ph. D. in Physics, Milano University
1993-1995: Post Graduate Fellow at LNF
1991-1993: Degree thesis Fellow at LNF
1987-1993: Degree Student in “La Sapienza” (Rome)

**First Experience in KLOE, Degree thesis (with Fellow at LNF) and Post Graduate Fellow at LNF(1991-1995):**

I started my activity in particle physics in 1991 with my degree thesis during the design of the KLOE Experiment at DAFNE. I was involved in the R.D. and construction of the electromagnetic calorimeter and in the Monte Carlo studies for the CP violation measurements.

**The ALEPH Experience, Ph.D in Milano and Research Associate at CERN(1995-2000):**

I chose to go to Milano for my Ph.D., and joined the ALEPH experiment at LEP in September 1995, which had just started the high energy run above the Z resonance. Searches for new physics and electroweak measurement above the Z pole were the main physics topics of the experiments.

**Back in KLOE, Post-Doc Fellow at LNF and Staff Researcher at LNF (2000-2010):**

While finishing the analyses in ALEPH, I participated to the first KLOE run in 2000. We started with the detectors calibration and when I went back to Frascati with a Post-Doc

Fellow I took the responsability of the tracking group. In 2001 I become permanent Staff Researcher at LNF. I then started working with the KLOE Kaon physics group on semileptonic decays and in 2004 I have been appointed KLOE Kaon physics convener and we finalized the first precise measurement such as: the dominant $K_L$ absolute branching ratios, the $K_L$ lifetime, and the $V_{US}$ determination. the relation to be performed with data from a single experiment.

I have performed the best CPT test with the Bell Steinberger with world average data from the PDG in collaboration and the work is part of a PDG review.

I also worked in the Flavianet European network as co-convener of the Flavianet kaon group with G. Isidori.

**Smooth transition to ATLAS (2002-now):**

While having a strong involvement in KLOE I also contributed to the LNF ATLAS activity from 2002. At the end of 2010 I've been appointed as LNF ATLAS team leader. The group strongly contributed to the project and construction of the MDT in the muon spectrometer. We are strongly contributing to work on the H→ZZ→4leptons analysis from the early phase. We are currently involved in the upgrade activity for the new small wheel. We have the responsibility for the assembling and test micromegas chambers SM1 having contributed to the mechanical design, and the RD phase. In addition we participated to the FTK upgrade and we are runnening one of the 4 italian Tier-2.

**LEMMA (2011-now):**

The Idea of producing low emittance muon beams from $e^+ e^-$ started from a discussion I had with Pantaleo Raimondi on the possible applications that the Linac required by the SUPERB project could have offer. Since that time many progresses have been made and I always participated to the activity. Presently I'm coordinating the activity in CSN1.

**10 selected publications**

[2]F.Ambrosino et al. [KLOE Collaboration], "Measurements of the absolute branching ratios for the dominant KL decays, the KL lifetime, and Vus with the KLOE detector," Phys. Lett. B 632, 43 (2006)(corresponding author)

[3] F.Ambrosino et al. [KLOE Collaboration], "Precise measurement of $\Gamma(K\to e\nu\gamma)/\Gamma(K\to\mu\nu\gamma)$ and study of $K\to e\nu\gamma$," Eur. Phys. J. C 64, 627 (2009)(corresponding author)

[4] F.Ambrosino et al., [KLOE Collaboration], "Measurement of the branching ratio of the $KL\to\pi^(\pi^)$decay with the KLOE detector", Phys. Lett. B638, 140 (2006) (corresponding author)

[5]F.Ambrosino et al., [KLOE Collaboration], "First observation of quantum interference in the process $\phi\to KSKL\to\pi^(\pi^)\pi^(\pi^)$: A test of quantum mechanics and CPT symmetry," Phys. Lett. B 642, (2006) (corresponding author)

[6]A. Heister et al. [ALEPH Collaboration],n" Search for scalar quarks in e+ e- collisions at √sup to 209-GeV," Phys. Lett. B 537, (2002) (corresponding author)

[7 ]G. Aad et al. [ATLAS Collaboration], "Observation of a new particle in the search for the Standard Model Higgs boson with the ATLAS detector at the LHC," Phys. Lett. B 716 (2012) (author of supporting notes for the WW and ZZ channels)

[8] M. Antonelli et al. ``Precision tests of the Standard Model with leptonic and semileptonic kaon decays", arXiv:0801.1817. (corresponding author and group convener)

[9]M. Antonelli, V. Cirigliano, A. Lusiani and E. Passemar,``Predicting the $\tau$ strange branching ratios and implications for Vus," JHEP 1310 (2013) .(corresponding author)

[10]M. Antonelli and G. D'ambrosio, ``CPT Invariance Tests in Neutral Kaon Decay.". Review in: J.~Beringer et al. [Particle Data Group Collaboration], "Review of Particle Physics (RPP), Phys. Rev. D86 (2012); updated in http://pdg.lbl.gov/. (corresponding author of the review on CPT invariance)

## Curriculum Vitae
## Manuela Boscolo (INFN LNF)

22/05/1996: Laurea in Fisica (110/110 cum laude) Department of Physics University of Milan
6/4/2000: PhD in Applied Electromagnetism and Electro-Physical Science, Sapienza University di Rome, XII cycle.
23/12/1999: art. 23 as Technologist in Accelerator Division of the LNF.
23/12/2004: Permanent position as Technologist in Accelerator Division of the LNF

**Projects**
2015-today LEMMA
2014-today FCC-ee and FCC-hh, EuroCirCol
2013-2014 Tau Charm factory
2007-2012 SuperB
2002-2010 SPARC
1997-today DAFNE

**Main official and international responsibilities**
2015-today Responsible of EU-H2020 EuroCirCol project, INFN grant: 422kE
2014-today Convener FCC-ee Machine Detector Interface group at CERN
2014-today Member of the FCC International Collaboration Board
2017- today responsible for the RD_FA activity for the LNF supported by the CNS1
2017-today convener of the WP3 on MDI for future accelerators in the RD_FA activity
1999-today DAFNE Run Coordinator
2006-2012 convener of the MDI SuperB group
2016 Member of Phd jury in Paris Sud-Saclay-LAL
2016 LOC Chair FCC WEEK16 Conference Rome
2012-2015 Chair of the LNF Seminars committee and mini-workshops
2011-214 Elected as representative of the LNF Technologists
Member of many scientific program committee of conferences and workshops and review committee panels
Invited to serve as chair in workshops and conferences
Invited to present in many international conferences
Referee of international Journals

**Scientific publications**
She is co-author of more than 220 papers in leading journals and international conference proceedings.

**Summary of scientific activity**
Manuela Boscolo was born in Lecce in 1970. She graduated in Physics at University of Milan in 1996 (110/110 cum laude) working for her thesis at INFN Laboratories in Frascati with an INFN scholarship. She got her PhD at Sapienza University of Rome on Applied Electromagnetism and Electro-Physical Science in April 2000, with a thesis on Beam-Beam Interaction Effects in DAFNE.

She continued her scientific activity in the Accelerator Division, Accelerator Physics group, at LNF. She became a permanent staff technologist in 2004. She has been working on DAFNE and SPARC, as

well as future design projects such as SuperB, Tau/Charm, SPARX, and more recently FCC and LEMMA.

She is now convener of the MDI group for the CERN future collider FCC-ee, with a leading role in the interaction region and Machine Detector Interface design.

Currently INFN team leader of EuroCirCol (Eu project INFRADEV).

She was convener of the MDI group for SuperB with scientific activity on the SuperB background and lifetime. She had a leading role also in the feasibility study of the Tau/Charm factory.

Expert on the commissioning and performances optimization of the of DAFNE, she gave a great contribution to the understanding and control of the main background source for the experiment, the Touschek effect. She was responsible for designing the MDI for the new KLOE interaction region, with additional collimators through the main rings and additional shieldings in the interaction region.

She was also a leading participant of the SPARC project, by defining the parameters working point of the accelerator, by simulating the experimental conditions of data. She also proposed the innovative technique named Laser Comb, now used for plasma wake-fields acceleration experiment, and designed and proposed an additional beamline for Thz radiation.

Selection of 10 publications


1. M. Boscolo, M. Antonelli, M.E. Biagini, O.R. Blanco-Garcia, A. Variola, F. Collamati, A. Bacci, S. Liuzzo, P. Raimondi, I. Chaikovska, R. Chahab, M.Iafrati, L. Keller, P. Sievers, *Studies of a scheme for low emittance muon beam production from positrons on target,* Proc. of IPAC17, WEOBA3, Copenhagen (2017)
2. K. Oide, M. Aiba, S. Aumon, M. Benedikt, A.Blondel, A. Bogomyagkov, M. Boscolo, H. Burkhardt, Y. Cai, A. Doblhammer, B. Haerer, B. Holzer, J.M. Jowett, I. Koop, M. Koratzinos, E. Levichev, L. Medina, K. Ohmi, Y. Papaphilippou, P. Piminov, D. Shatilov, S. Sinyatkin, M. Sullivan, J. Wenninger, U. Wienands, D. Zhou, and F. Zimmermann, *Design of beam optics for the Future Circular Collider e+e-collider rings,* Phys. Rev. Accel. Beams 19, no. 11, 111005 (2016)
3. M. Boscolo, H. Burkhardt and M. Sullivan, *Machine detector interface studies: Layout and synchrotron radiation estimate in the future circular collider interaction region,* Phys. Rev. Accel. Beams 20, no. 1, 011008 (2017).
4. M. Zobov *et al*., *Test of crab-waist collisions at DAFNE Phi factory*, Phys. Rev. Lett. 104 , 174801 (2010)
5. [M. Boscolo, F. Bossi, B. Buonomo, G. Mazzitelli, F. Murtas, P. Raimondi, G. Sensolini, M. Schioppa, F. Iacoangeli, P. Valente, N. Arnaud, D. Breton, L. Burmistrov, A. Stocchi, A. Variola, B. Viaud, P. Branchini, *Luminosity and background measurements at the e+e- DAFNE collider upgraded with the crab waist scheme*, Nucl. Instrum. Meth. A 621 , 121 (2010).
6. M. Boscolo and P. Raimondi, *Monte Carlo simulation for the Touschek effect with the crab-waist scheme*, Phys. Rev. ST Accel. Beams 15 , 104201 (2012).
7. M. Baszczyk et al. [SuperB Collaboration], *SuperB Technical Design Report*, arXiv:1306.5655 [physics.ins-det], INFN-13-01-PI, LAL-13-01, SLAC-R-1003 495 pp
8. M.Ferrario *et al.*, *Experimental demonstration of emittance compensation with velocity bunching,* Phys. Rev. Lett. 104, 054801 (2010)
9. M.Ferrario *et al.*, *Direct measurement of the double emittance minimum in the beam dynamics of the SPARC high-brightness photoinjector,* Phys. Rev. Lett. 99, 234801 (2007).

*10.* M. Boscolo, M. Ferrario, I. Boscolo, F. Castelli and S. Cialdi, *Generation of short THz bunch trains in a RF photoinjector,* Nucl. Instrum. Meth. A 577, no. 3, 409 (2007).

*Manuela Boscolo,*
*Frascati, 25/01/2019*