

PERSONAL INFORMATION **Gemma Luzzi**

## EDUCATION

- 2006 PhD in Astronomy, Sapienza University of Rome.  
Thesis: *Sunyaev-Zel'dovich effect from MITO: observations and cosmological implications*.  
Supervisors: Prof. Francesco Melchiorri and Dr. Marco De Petris. Excellent judgement of the internal commission.
- 2002 Laurea in Physics (Astrophysics and Space Science), Sapienza University of Rome.  
Thesis: *Development of a Photometer for Millimetric Astronomy*.  
Supervisor: Prof. Francesco Melchiorri. Co-tutor: Dr. Luca Lamagna. Final grade: 109/110.

## RESEARCH INTERESTS

Observational Cosmology, Sunyaev-Zel'dovich (SZ) effect, Galaxy Clusters, Cosmic Microwave Background (CMB), Spectral Distortions of the CMB.  
See Annex 1 for a detailed description of the research activity.

## RESEARCH EXPERIENCE

- 2016–present Postdoc (Assegno di Ricerca) cat. A Tip. II. Physics Department, Sapienza University of Rome.
- 2015–2016 Postdoc (Assegno di Ricerca) cat. A Tip. II. Physics Department, Sapienza University of Rome.
- 2014–2015 Postdoc (Assegno di Ricerca) cat. B Tip. II. Physics Department, Sapienza University of Rome.
- 2013–2014 Postdoc (Assegno di Ricerca) cat. A Tip. II. Physics Department, Sapienza University of Rome.
- 2009–2012 Postdoc CNRS (Chercheur a duree determinee), 'Laboratoire de l'Accelérateur Lineaire', Université de Paris-Sud, CNRS/IN2P3, Orsay (France); maternity leave.
- 2008–2009 Postdoc (Borsa di Ricerca). Physics Department, Sapienza University of Rome.
- Dec 2006– Jan 2007 Visitor at the Astrophysics Institute of the Canary Islands (ES).
- 2006–2008 Postdoc (Assegno di Ricerca). Physics Department, Sapienza University of Rome.

## MEMBERSHIP IN SCIENTIFIC COLLABORATIONS AND ROLE

- 2016–2017 CORE satellite. Among main authors of the CORE paper on cluster science.
- 2009–2012 Planck satellite. Planck-HFI Core Team Member.

- 2008-2009 SAGACE satellite. Science team member of the SAGACE (Spectroscopic Active Galaxies And Clusters Explorer) project, Phase A Study (ASI small missions).
- 2001-2008 MITO experiment. In charge of the project, realisation and test of the  $3\text{He}$ - $4\text{He}$  fridge of MAD (Multi Array of Detectors) for MITO.

PUBLICATIONS (SEE ANNEX 2)

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32 publications on refereed journals, 9 conference proceedings, 2 submitted papers;  
total citations: 723 (source ADS), h-index: 15 (source ADS).

TEACHING AND SUPERVISION  
OF STUDENTS:

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Teaching experience

- 2015 Teaching assistant: Mechanics, Physic Department, Prof. Antonio Capone - Dr. Gemma Luzzi, 'Sapienza' University of Rome A.A.2014-2015, 12 CFU, (80 students, 35 hours).
- 2006-2007 Teaching assistant: Physics I (Mechanics and Thermodynamics) for Geological sciences, University of Rome 'La Sapienza' (60 students, 30 hours.)
- 2005 Laboratory assistant (Cryogenics) for training students of the Master in Physics, University 'La Sapienza'.
- 2003-2004 Teaching assistant: Physics II (Electromagnetism) for Informatics, University of Rome 'La Sapienza', (30 hours).

Bachelor's degree theses (co-advisor)

- 2006-2007 Miglietta – 'Sapienza' University of Rome. Title: 'Clusters of galaxies: analysis in the X-ray band and in the millimetric band'.
- 2003-2004 Scichilone – 'Sapienza' University of Rome. Title: 'Cryogenic techniques in astrophysics: the MAD experiment'.

FUNDED PROJECTS

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- 2016-2017 Ateneo 2016, Sapienza. Cosmic complementarity: using Cosmic Microwave Background anisotropies, Weak Lensing and Clusters to constrain Dark Matter and Dark Energy. P.I. Alessandro Melchiorri.  
Role: participant.
- 2012-2013 France-Portugal research program PHC PESSOA 2012. Testing fundamental physics with Planck. 4100 euro per year French side, two years project.  
Role: PI de facto (French side).
- 2006 PRIN 2006. Sviluppo di una camera bolometrica in banda W e sensibile alla polarizzazione (W-CAM). P.I. Paolo de Bernardis.  
Role: participant.
- 2006-2007 Azioni integrate Italia-Spagna 2004. Joint Radio and Millimetric Observations of Cosmic Microwave Background Radiation. P.I. Francesco Melchiorri.  
Role: participant.

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 PEER REVIEW

Referee for Monthly Notices of the Royal Astronomical Society

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 SEMINARS AND CONFERENCES:

## Talks and posters at conferences:

- 2017 Alpine Cosmology Workshop, Oberstdorf, Bavaria, Germany, 24-28 July 2017. **Contributed talk.**
- 2016 Hot spot in the XMM sky: Cosmology from X-ray to radio. Mikonos island, Greece, 15-18 June 2016. **Poster.**
- 2016 LX Congresso della Società Astronomica Italiana, Rome, 2-6 May 2016, CNR. **Poster.**
- 2015 101st National Congress of the Italian Physical Society, Rome, 21-25 September 2015 Department of Physics, 'Sapienza' University of Rome. **Contributed talk.**
- 2012 'Astrophysics from the radio to the sub-millimetre: Planck and other experiments in temperature and polarization' Bologna, Italy, Area della Ricerca del CNR February 13th-17th, 2012. **Poster.**
- 2009 'Varying Fundamental Constants', Leiden, Lorentz center, 18-20 May 2009. **Invited talk.**
- 2007 Tracing Cosmic Evolution with Clusters of Galaxies: Six Years Later, Sesto (BZ) Alto Adige, Italy June 25-29, 2007. **Poster.**
- 2006 CMB and Physics of the Early Universe International Conference, Ischia, Italy 18-20 April, 2006. **Poster.**

## Departmental seminars:

- 2012 CAUP seminar, June 2012. Portugal  
Title: *Measuring the evolution of the CMB temperature from the SZ effect with Planck.*
- 2011 IAS seminar, February 2011. France  
Title:  *$T_{\text{CMB}}$  vs redshift and the Hubble diagram from the SZ effect with Planck.*
- 2010 LAL seminar, March 2010. France  
Title:  *$T_{\text{CMB}}$  vs redshift and the Hubble diagram from the SZ effect.*

## Participation to other schools, workshops, courses and meetings:

- 2011 'The millimeter and submillimeter sky in the Planck mission era' Paris, Cite' des Sciences 10-14 January, 2011.
- 2005 Summer School Alpbach 2005: 'Dark Energy And Dark Matter In The Universe', July 19 - July 28, 2005.
- 2005 Ecole Internationale Daniel Chalonge, 9th Paris Cosmology Colloquium 2005 'Physics of the Early Universe confronts Observations', Observatoire de Paris, Paris campus Thursday 30 June, Friday 1st July and Saturday 2 July, 2005.

- 2004 International Summer School 'Data Analysis in Cosmology', Valencia, Spain, 6 - 10 September 2004.
- 2004 'International Enrico Fermi School of Physics' course CLIX. 'Background Microwave Radiation and Intracluster Cosmology', Varenna, July 6-16 2004.
- 2001 Experimental Cosmology at Millimetre wavelengths: 2K1BC Workshop, Breuil-Cervinia, Valle d'Aosta, Italy, 9-13 July, 2001.

ADDITIONAL INFORMATION: \_\_\_\_\_

- 2017 Selected proposal for the call 'PhD projects for an International scholarship in ITALY', (INAF scholarship – international Agreements signed between Spain and Italy).  
Title: *Measuring the Universe's temperature and expansion with galaxy clusters*.  
Proponents: Dr. M. De Petris, Dr. G. Luzzi, Dr. R. Genova-Santos. Student: Mr. Umut Emek Demirbozan. 3 years PhD grant.
- 2013 Approved proposal for the shortlisting phase (Preselezione) of 'Futuro in Ricerca 2013', Title: *Cosmologia e fisica fondamentale con ammassi di galassie*; PI: Dr. G. Luzzi; Thresholds 8/10, final score 8/10 (D.D. 718 del 19 aprile 2013).
- 2013 Qualified in the 2<sup>nd</sup> AstroFit call (Thresholds 70/100;) Final score 78,9/100.

OBSERVING EXPERIENCE: \_\_\_\_\_

- 2006 Test of the atmospheric emission spectrometer CASPER-2 at MITO (*Millimeter and Infrared Testagrigia Observatory*) telescope (approximately one month).
- 2004 Observation of the Corona Borealis Supercluster at the MITO telescope (approximately one month).
- 2001–2002 Observations of the Coma cluster at the MITO telescope (approximately one month).

SKILLS AND LANGUAGES: \_\_\_\_\_

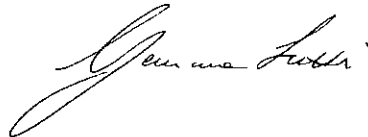
Languages: Italian (mother tongue), English (advanced), French (advanced), Spanish (elementary).

Professional skills Data analysis: MCMC algorithms, Bayesian statistical methods, physical interpretation and simulation of data, maps treatment, use of hydrodynamical simulations.  
Able to work in a team and in a multicultural environment.

Computer skills – Operating systems: Mac OS X, Linux, Windows  
– Computing languages: IDL  
– Specific softwares: HEALPix, LaTeX, BibTeX, Beamer, Emacs, Kile, AutoCAD, PowerPoint, Word, Excel.

## REFERENCES:

- Prof. P. de Bernardis, Experimental Cosmology Group, Dept. of Physics, Sapienza University of Rome, P.le A.Moro 2 - 00185 Rome, Italy. [paolo.debernardis@roma1.infn.it](mailto:paolo.debernardis@roma1.infn.it)
- Dr. Marco De Petris, Experimental Cosmology Group, Dept. of Physics, Sapienza University of Rome P.le A.Moro 2 - 00185 Rome, Italy. [marco.depetris@roma1.infn.it](mailto:marco.depetris@roma1.infn.it)
- Dr. C. Martins, Centro de Astrofísica, Universidade do Porto, Rua das Etrelas, 4150-762 Porto, Portugal. [carlos.martins@astro.up.pt](mailto:carlos.martins@astro.up.pt)
- Dr. O. Perdereau, Laboratoire de l'Accélérateur Lineaire, Université de Paris-Sud bat 200, F-91898 Orsay Cedex, France. [perderos@lal.in2p3.fr](mailto:perderos@lal.in2p3.fr)
- Prof. F. Piacentini, Experimental Cosmology Group, Dept. of Physics, Sapienza University of Rome, P.le A.Moro 2 - 00185 Rome, Italy. [francesco.piacentini@roma1.infn.it](mailto:francesco.piacentini@roma1.infn.it)
- Prof. R. Rebolo, Instituto de Astrofísica de Canarias, c/ Via Lactea S/N, 38200 - La Laguna (Tenerife), Spain. [rr1@iac.es](mailto:rr1@iac.es)
- Prof. Y. Rephaeli, School of Physics and Astronomy, Tel Aviv University, Tel Aviv, 69978, Israel. [yoelr@wise.tau.ac.il](mailto:yoelr@wise.tau.ac.il)
- Prof. G. Yepes, Universidad Autonoma de Madrid, Department of Theoretical physics, Madrid, Spain. [gustavo.yepes@uam.es](mailto:gustavo.yepes@uam.es)



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