

# Mariachiara Rossetti

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## Personal Data

Born in Milan, May 26th 1978

Fiscal code: RSSMCH78E66F205K

Nationality: Italian

## Formation

Dec 2006, **PhD in Physics, Astrophysics and applied Physics**, Università degli Studi di Milano, Thesis: "Thermodynamical maps of merging galaxy clusters", University supervisor: Prof. Marco Bersanelli, External supervisor: Dr. Silvano Molendi

July 2003, **Master in Physics**, Università degli Studi di Milano, final mark: 110/110 *cum laude*

## Research Experience

July 2011 - present: **Post-Doc** at University of Milan, in the Observational Cosmology group, working on galaxy clusters through SZ effect and X-ray data.

February 2009 - June 2011: **Post-Doc** at Istituto di Astrofisica spaziale e Fisica Cosmica di Milano (IASF MI-INAF), working on the X-ray emission of galaxy clusters.

June 2008- January 2009: **Maternity leave**

November 2006-May 2008: **Post-Doc** at Istituto di Astrofisica spaziale e Fisica Cosmica di Milano (IASF MI-INAF), working on the X-ray emission of galaxy clusters.

September 2003-December 2003: **Research contract** Istituto di Astrofisica spaziale e Fisica Cosmica di Milano (IASF MI-INAF)

## Collaborations

Since June 2011, I am member of the Planck Collaboration, of the LFI Core Team, and of the Working Group 5 "Clusters and Secondary Anisotropies". Within this large collaboration, I am currently in charge of the validation with external catalogues and ancillary data of candidates SZ sources, in view of the forthcoming 2014 release of the Planck SZ Catalogue. I have been responsible for the analysis of follow-up X-ray observations of two superclusters discovered by Planck and of their scientific interpretation (Planck Intermediate Results. VI. Corresponding author: M.Rossetti). I am also involved in LFI calibration activities.

I joined the Euclid Consortium in 2011. I contributed to the Athena+ White Papers in 2013 and I am part of the ICM astrophysics Working Group.

List of collaborators in Italy and abroad: S.Molendi, S.Ghizzardi, F.Gastaldello, A.Tiengo, S.Donzelli (IASF-Milano), M.Bersanelli, A. Mennella, D. Maino, M. Tomasi, N. Krachmalnicoff (University of Milan), S. De Grandi (OA-Brera), P. Mazzotta, H. Bourdin (Università di Roma Tor Vergata), S. Ettori, S. Bardelli (OA Bologna), M.Roncarelli (Università di Bologna), T.Venturi, G. Brunetti, R. Cassano (IRA Bologna); D.Eckert (University of Geneva, CH), S. Giacintucci (University of Maryland, USA), E. Roediger (University of Hamburg, D), L. Rudnick, D. Farnsworth (University of Minnesota, USA), M.Sun (University of Alabama Huntsville, USA), M. Markevitch, J.ZuHone (Goddard Space Flight Center, USA), D.Sutton, D.Harrison, P.Carvalho, M. Ashdown (IoA, University of Cambridge, UK), J.B. Melin, G.Pratt (CEA Saclay, FR), J. Bartlett (APC University of Paris 7, FR), E. Pointecouteau, I. Flores-Cacho (IRAP Toulouse, FR), G. Hurier (IAS, University of Paris Sud, FR), J. Macias-Peres (LPSC Grenoble, FR), H. Dahle (University of Oslo, N), A. Finoguenov (University of Helsinki, FIN), J.M. Diego (IFCA, E)

### *Research interests*

Physics of the Intracluster medium through X-ray and SZ observations.

Non thermal processes in galaxy clusters

Cosmology with galaxy clusters

## Publications

I am author of 24 publications on refereed journals, with a total number of 390 citations and h-factor 13 (Source ADS, March 2014).

### *Publications in peer-reviewed journals*

Venturi T., **Rossetti M.**, Bardelli S., Giacintucci S., Dallacasa D., Cornacchia M. & Kantharia N.G., "Radio emission at the center of the galaxy cluster A3560: evidence for core sloshing?", *Astronomy & Astrophysics*, V. 558, id.A146 (2013).

<http://adsabs.harvard.edu/abs/2013A%26A...558A.146V>

Planck Collaboration, "Planck Intermediate Results.XI: The gas content of dark matter halos: the Sunyaev-Zeldovich-stellar mass relation for locally brightest galaxies", *Astronomy & Astrophysics*, V.557, id.A52 (2013)

<http://adsabs.harvard.edu/abs/2013A%26A...557A..52P>

**Rossetti, M.**; Eckert, D.; De Grandi, S.; Gastaldello, F.; Ghizzardi, S.; Roediger, E.; Molendi, S. "Abell 2142 at large scales: an extreme case for sloshing?", *Astronomy & Astrophysics*, v.556, id A44 (2013)

<http://adsabs.harvard.edu/abs/2013A%26A...556A..44R>

Gastaldello, F.; Di Gesu, L.; Ghizzardi, S.; Giacintucci, S.; Girardi, M.; Roediger, E.; **Rossetti, M.**; Brighenti, F.; Buote, D. A.; Eckert, D.; Ettori, S.; Humphrey, P. J.; Mathews, W. G. "Sloshing cold fronts in galaxy groups and their perturbing disk galaxies: an X-ray, Optical and Radio Case Study", *The Astrophysical Journal*, v. 770, id 56 (2013)

<http://adsabs.harvard.edu/abs/2013ApJ...770...56G>

Planck Collaboration "Planck intermediate results. X. Physics of the hot gas in the Coma cluster" *Astronomy & Astrophysics*, v. 554, id A140 (2013)

<http://adsabs.harvard.edu/abs/2013A%26A...554A.140P>

Planck Collaboration “Planck intermediate results. VIII. Filaments between interacting clusters”, *Astronomy & Astrophysics* v. 550, id A134 (2013)

<http://adsabs.harvard.edu/abs/2013A%26A...550A.134P>

Planck Collaboration “Planck intermediate results. VI. The dynamical structure of PLCKG214.6+37.0, a Planck discovered triple system of galaxy clusters”, *Astronomy & Astrophysics* v. 550, id A132 (2013)

Corresponding author: **M.Rossetti**

<http://adsabs.harvard.edu/abs/2013A%26A...550A.132P>

Planck Collaboration “Planck intermediate results. V. Pressure profiles of galaxy clusters from the Sunyaev-Zeldovich effect”, *Astronomy & Astrophysics* v. 550, id A131 (2013)

<http://adsabs.harvard.edu/abs/2013A%26A...550A.131P>

Planck Collaboration “Planck intermediate results. IV. The XMM-Newton validation programme for new Planck galaxy clusters”, *Astronomy & Astrophysics* v. 550, id A130 (2013)

<http://adsabs.harvard.edu/abs/2013A%26A...550A.130P>

Planck Collaboration “Planck intermediate results. III. The relation between galaxy cluster mass and Sunyaev-Zeldovich signal”, *Astronomy & Astrophysics* v. 550, id A129 (2013)

<http://adsabs.harvard.edu/abs/2013A%26A...550A.129P>

Planck Collaboration “Planck intermediate results. II. Comparison of Sunyaev-Zeldovich measurements from Planck and from the Arcminute Microkelvin Imager for 11 galaxy clusters”, *Astronomy & Astrophysics* v. 550, id A128 (2013)

<http://adsabs.harvard.edu/abs/2013A%26A...550A.128P>

Planck Collaboration, “Planck Intermediate Results. I. Further validation of new Planck clusters with XMM-Newton”, *Astronomy & Astrophysics* v.543, id.A102 (2012)

<http://adsabs.harvard.edu/abs/2012A%26A...543A.102P>

Eckert D., Vazza F., Ettori S., Molendi S., Nagai D., Lau E. T., Roncarelli M., **Rossetti M.**, Snowden S. L. & Gastaldello, F., “The gas distribution in the outer regions of galaxy clusters”, *Astronomy & Astrophysics*, v.541, id.A57 (2012)

<http://adsabs.harvard.edu/abs/2012A%26A...541A..57E>

**Rossetti M.**, Eckert D., Cavalleri B. M., Molendi S., Gastaldello F., Ghizzardi, S. “Back and forth from cool core to non-cool core: clues from radio halos”, *Astronomy & Astrophysics*, v.532, id.A123 (2011)

<http://adsabs.harvard.edu/abs/2011A%26A...532A.123R>

Eckert D., Molendi S., Gastaldello F., **Rossetti M.** “X-ray observations of PKS 0745-191 at the virial radius: are we there yet?”, *Astronomy & Astrophysics*, v.529, id.A133 (2011)

<http://adsabs.harvard.edu/abs/2011A%26A...529A.133E>

Barrena R., Girardi M., Boschin W., de Grandi S., Eckert D., **Rossetti M.** “Internal dynamics of the galaxy cluster Abell 545. The ideal case where to study the simultaneous formation of a galaxy system and its brightest galaxy”, *Astronomy & Astrophysics*, v.529, id.A128 (2011)

<http://adsabs.harvard.edu/abs/2011A%26A...529A.128B>

Ettori S., Gastaldello F., Leccardi A., Molendi S., **Rossetti M.**, Buote D. & Meneghetti M. “Mass profiles and  $c - M_{DM}$  relation in X-ray luminous galaxy clusters”, *Astronomy & Astrophysics*, v.524, id.A68 (2010)

<http://adsabs.harvard.edu/abs/2010A%26A...524A..68E>

Ghizzardi S., **Rossetti M.** & Molendi S., “Cold fronts in galaxy clusters”, *Astronomy & Astrophysics*, v.516, id.A32 (2010)

<http://adsabs.harvard.edu/abs/2010A%26A...516A..32G>

**Rossetti M.** & Molendi S., “Cool core remnants in galaxy clusters”, *Astronomy & Astrophysics*, v.510, id.A83 (2010)

<http://adsabs.harvard.edu/abs/2010A%26A...510A..83R>

Leccardi A., **Rossetti M.** & Molendi S., “Thermodynamic and chemical properties of the Intracluster Medium”, *Astronomy & Astrophysics*, v.510, id.A82 (2010)

<http://adsabs.harvard.edu/abs/2010A%26A...510A..82L>

**Rossetti M.**, Ghizzardi S., Molendi S. & Finoguenov A., “A cluster in a crowded environment: XMM-Newton and Chandra observations of A3558”, *Astronomy & Astrophysics*, v.463, pp. 839-851 (2007)

<http://adsabs.harvard.edu/abs/2007A%26A...463..839R>

**Rossetti M.** & Molendi S., “Is there a hard tail in the Coma Cluster X-ray spectrum”, *Astronomy & Astrophysics*, v.414, pp.L41-L44 (2004)

<http://adsabs.harvard.edu/abs/2004A%26A...414L..41R>

### *Publications under review*

Planck Collaboration “Planck 2013 results. I. Overview of products and scientific results”, submitted to *Astronomy & Astrophysics*.

<http://adsabs.harvard.edu/abs/2013arXiv1303.5062P>

Planck Collaboration “Planck 2013 results. II. The Low Frequency Instrument data processing”, submitted to *Astronomy & Astrophysics*.

<http://adsabs.harvard.edu/abs/2013arXiv1303.5063P>

Planck Collaboration “Planck 2013 results. III. LFI systematic uncertainties”, submitted to *Astronomy & Astrophysics*.

<http://adsabs.harvard.edu/abs/2013arXiv1303.5064P>

Planck Collaboration “Planck 2013 results. V. LFI calibration”, submitted to *Astronomy & Astrophysics*.

<http://adsabs.harvard.edu/abs/2013arXiv1303.5066P>

Planck Collaboration “Planck 2013 results. XXI. Cosmology with the all-sky Planck Compton parameter  $y$ -map”, submitted to *Astronomy & Astrophysics*.

<http://adsabs.harvard.edu/abs/2013arXiv1303.5081P>

Eckert D., Etori S., Molendi S., Vazza F., Roncarelli M., Gastaldello F. & **Rossetti M.** “Gas clumping in galaxy clusters”, submitted to *Astronomy & Astrophysics*.

<http://adsabs.harvard.edu/abs/2013arXiv1310.8389E>

### *Conference proceedings*

Bersanelli et al. “A coherent polarimeter array for the Large Scale Polarization Explorer (LSPE) balloon experiment”, *Proceedings of the SPIE*, Volume 8446, article id. 84467C, 14 pp. (2012).

<http://adsabs.harvard.edu/abs/2012SPIE.8446E..7CB>

**Rossetti M.**, Cavalleri B. M., Molendi S., Gastaldello F., Ghizzardi S., Eckert D. “A radio approach to the cool core - non cool core dichotomy”, *Memorie della Società Astronomica Italiana*, v.82, p.537 (2011)

<http://adsabs.harvard.edu/abs/2011MmSAI..82..537R>

Ghizzardi S., Molendi S., **Rossetti M.** & Leccardi A., "Cold fronts in cool core clusters", proceedings della conferenza "Heating vs. Cooling in Galaxies and Clusters of Galaxies", Garching, Germania, Agosto 2006, eds H. Boehringer, P. Schuecker, G. W. Pratt & A. Finoguenov, in Springer-Verlag series "ESO Astrophysics Symposia"

<http://adsabs.harvard.edu/abs/2007hvcb.conf...33G>

Ghizzardi S., Molendi S., Leccardi A. & **Rossetti M.**, "Searching for Sharp Surface Brightness Discontinuities: a Systematic Study of Cold Fronts in Galaxy Clusters", proceedings della conferenza "The X-ray Universe 2005", San Lorenzo de El Escorial, Spagna, Settembre 2005.

<http://adsabs.harvard.edu/abs/2006ESASP.604..717G>

## Presentations

### *Invited Seminars*

Seminar at INAF - IRA, "A multi-wavelength approach to the CC-NCC dichotomy", 19/04/10

Seminar at INAF - OA Bologna, "Looking at merging clusters in X-rays", 26/04/07.

Seminar at MPE-Garching (Germany) "A joint Chandra and XMM-Newton analysis of A3558", 20/04/05.

### *Presentations at scientific conferences*

Oral contribution "Snowcluster 2013. Physics of galaxy clusters", 24-29/03/13, Snowbird, UT (USA)

Invited Oral contribution "Cold fronts in galaxy clusters. Sloshing through the Dolomites", 14-18/01/13, Sesto Pusteria (BZ)

Oral contribution "Galaxy clusters as giant cosmic laboratories", 21-23/05/12, Madrid (Spain)

Oral contribution "SZX Huntsville 2011: Cosmology with X-ray and SZ effect observations of galaxy clusters", 19-22/09/11, Huntsville (USA)

Oral contribution "The X-ray Universe 2011", 27-30/06/11, Berlin (Germany)

Oral contribution "Non thermal phenomena in colliding galaxy clusters", 15-18/11/10, Nice (France)

Poster presentation "Tracing cosmic evolution with clusters of galaxies", 1-5/07/13, Sesto Pusteria (BZ)

Poster presentation "The X-ray conference 2009", 7-11/09/09, Bologna

Poster presentation "Tracing cosmic evolution with galaxies and clusters of galaxies", 25-29/06/07, Sesto Pusteria (BZ)

Poster presentation "Heating vs cooling, in galaxies and clusters of galaxies", 6-11/08/06, Garching (Germany)

Poster presentation "The X-ray Universe 2005", 26-30/09/05, El Escorial (Spain)

Poster presentation COSPAR, 18-25/07/04, Paris (France).

Poster presentation "The Restless High Energy Universe", 5-8/05/03, Amsterdam (The Netherlands)

## Peer Review

Referee for Monthly Notices of the Royal Astronomical Society since 2013

## Accepted observing proposals

As Principal Investigator: 3 accepted proposals with XMM-Newton (230 ks) and one Chandra observation (20 ks)

Co-Investigator of several XMM-Newton, Chandra and Suzaku observations, of two observations with GMRT, one observation with LOFAR, one with MWA and one with KAT7, one night at WHT OASIS IFU, one Large Programme ITP (Canary Islands observatories).

## Teaching Experience

Supervisor of 7 students during their master thesis at the University of Milan since 2009. List of students: B.M. Cavalleri (2008/2009 3-year master thesis), L.Bollea (2009/2010 3-years master thesis, and 2012/2013, 3 + 2 years master thesis) P.Cazzoletti (2011/2012, 3 years master), G.Ferioli (2011/2012, 3 years master), F. Brignoli (2012/2013 3 years master) and G. Ballabio (2012/2013 3 years master).

Lecturer (two hours) at the Astronomy (University of Milan) in Astrophysics (University of Pavia) classes since 2011 and at the PhD school in Astronomy (Università dell'Insubria) in 2008.

Since 2013/2014, teaching assistant (20 hours) in the Physics class for first year students in Natural Sciences, University of Milan.

Milan, 13/03/13

Mariachiara Rossetti