Elena Rasia
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CURRICULUM VITAE ET STUDIORUM
January 2016

CURRENT POSITION

Marie Curie Fellow at the Italian National Institute of Astrophysics, Observatory of Trieste, INAF-OATS (since February 2015)
University of Michigan, Ann Arbor, (USA), Assistant Research Scientist (since 2012)

RESEARCH INTEREST: Keywords and Abstract

Galaxy clusters: numerical simulations and observations; dark matter and intra-cluster medium; selection effects; X-ray and optical measurement biases

Investigating galaxy cluster properties is crucial to validate our knowledge of the fundamental physical processes that regulate the formation and evolution of cosmic structures and the interaction between the constituents of the universe: baryons, dark matter, and dark energy. Clusters are optimal systems to unveil the mysterious nature of the dark sector of our universe because their structural and thermodynamical properties facilitate their observation and, at first order, their modeling. However, to reach the precision required to significantly advance the knowledge of cosmological parameters, we need to carefully study possible sources of systematics affecting cluster measurements. To assist investigations on both cluster cosmology and cluster astrophysics, I analyze hydro-dynamical simulations adopting a strongly observational approach including both X-ray and optical analysis. My goals are
(i) to sharpen the interpretation of astrophysical processes highlighted by existing missions such as the Chandra X-ray Observatory, XMM-Newton, the Hubble Space Telescope or up-coming telescopes, such as Astro-H;
(ii) to develop a theoretical framework in support of future large cosmological cluster-based surveys such as e-Rosita, the Dark Energy Survey, the Large Synoptic Survey Telescope, Euclid;
(iii) to support the community in the preparation and development of scientific cases for future missions, such as Athena+ in which I am already involved.

PAST-POSITION & CURRICULUM STUDIORUM

No-tenure-track Assistant Professor of Astronomy, Astronomy Department, University of Michigan	2009-12
Post-doctoral Fellow in the Michigan Society of Fellows	2009-12
Chandra Fellow at the Physics Department, University of Michigan	2006-09
PhD in Astronomy at Padova University	2006
PhD Europeus in Astronomy[1]	2006

[1]European requirements: at least 6 months in a foreign European institution, 2 interna-

	Ph-D student at Padova University	2003-06
	Laurea in Astronomy at Padova University (110/110, summa cum laude)	2002

HONORS/ FELLOWSHIPS	*Marie Curie* Incoming Fellowship. Open to all European Countries and 6 macro areas (Chemistry; Economy; Information science and Engineering; environment and Geoscience; Mathematics; Physics). Total of 1959 proposals. Personal score 91.6/100	2014
	Michigan Society of Fellows Fellowship.	2009
	Chandra-Einstein Fellowship.	2006
	Marie Curie Host Fellowship	2006
	Marie Curie Host Fellowship	2005

CPU AWARDED in HPC:	PI: Biffi (2015) at DECI	1.000.000h
	PI: Borgani (2011) at ISCRA/CINECA	140.000h
	PI: Borgani (2010) at ISCRA/CINECA	100.000h
	PI: Borgani (2010) at ISCRA/CINECA	95.000h
	PI: Borgani (2009) at ISCRA/CINECA	95.000h
	PI: Dolag (2005) at ISCRA/CINECA	10.000h
	PI: Dolag (2004) at ISCRA/CINECA	14.000h
	PI: Dolag (2003)at ISCRA/CINECA	14.000h

GRANTS	**PI**: Marie Curie International Fellowship *"A multi-wavelength approach to investigate biases affecting galaxy clusters mass"*	€249K
	Co-PI: HST Theory proposal 2014-2016 *"Simulating HST observations of strong lensing clusters"*	\$120K
	PI: Theory Chandra Proposal 2012-15 *"Temperature Structure Characterization"*	\$60K
	PI: NSF proposal 2012-15 *"Investigating the Complex Interaction of Dark Matter and Gas in Cluster of Galaxies"*	\$363K
	PI: Michigan Society of Fellows' Fellowship 2009-11 *"Astrophysics and Cosmology with Synthetic X-Ray Catalogs of Galaxy Clusters"*	\$176.3 K
	Sc. PI: Michigan Center for Theoretical Physics grants for visitor program to support US-I galaxy cluster research. (2010-11)	\$2.6 K
	PI: Joint Project for the exchange of researchers within the executive program Italy-USA 2008-11 *"Investigate potentiality of two next generation space missions devoted to deciphering the Dark Side of our Universe"*	€6K
	Sc. PI: Michigan Center for Theoretical Physics grants for visitor program to support US-I galaxy cluster research. (2008-09)	\$5 K

tional referees for the PhD thesis and 2 international members in the defense committee.

PI: Chandra Fellowship grant number PF6-70042 awarded by the Chandra X-ray Center operated by SAO for NASA (2006-09) $267 K

PI: Dipartimento di Astronomia, Alma Mater Studiorum, University of Bologna research grant (2006) €40 K

"X-ray GC as probes of the dark Universe: observed and simulated properties"

Co-PI: Chandra Theory Award (2007-09) $70 K

"Bringing Theory Closer to Observation: mock X-Ray Catalogue of Galaxy Clusters"

PI: Marie Curie Host Fellowships: EARA Early Stage Training to work at Max Plank fuer Astrophysics (Garching, Germany, 2006) €10 K

PI: Marie Curie Host Fellowships: EARA Early Stage Training to work at Max Plank fuer Astrophysics (Garching, Germany, 2005) €10 K

PI: University of Padova for PhD studies (2003-05) €32K

Co-PI: COFIN 2001 research grant (2002) €32

"Numerical Models for formation and evolution of galaxy clusters"

PI: Cumulative travel support + Cluster meeting support $4K

TOTAL **$1065K + €379K**

Pending: PI submitted at NSF $380K

Pending: PI European Research Council- Consolidator €1785K

COLLOQUIA, CONFERENCES, SCHOOLS

92 total international events participation and contributions;
39 invitation to seminar, colloquia, and conferences contributions;
43 oral contributions at international conferences (plus 6 posters);
8 International PhD schools with 4 oral contributions.
The detailed list of contributions is attached at the end of this document.

EXTENDED VISITS

HOSTED: Nhut Truong (3 months) 10-12/2014

HOSTED: Herve Bourdin (1 month) 9/2014

HOSTED: Herve Bourdin (1 month) 3/2014

Kavli Institute of Santa Barbara (3 weeks) 2011

Harvard-Smithsonian Center for Astrophysics, Harvard (4 months) 2007

Max-Plank fuer Astrophysics, Garching (3 months) 2006

Max-Plank fuer Astrophysics, Garching (3 months) 2005

European Southern Observatory, Garching (1 month) 2004

Department of Physic, Durham University, U.K. (1 month) 2003

TEACHING

Primary Instructor: Introduction to Stars, Galaxies and the Universe (University of Michigan), 210 students ..... Winter term, 2012

Primary Instructor: Introduction to Stars, Galaxies and the Universe (University of Michigan), 250 students ..... Winter term, 2011

Guest Lecturer, Galaxies and the Universe (University of Michigan) ... 2009

Guest Lecturer, Numerical Methods for Physics (University of M.) 2008
Primary Instructor of Computing Lab: Introduction to
Astro-programming (Padova University, Italy) .....2nd Semestre 2004
I attended several workshops organized by "UM Instructional
Development and Educational Assessment, Institute on Teaching"
Participant of a seven-week-course on college teaching in Science and
Engineering organized by the UM Center for Research on Learning and
Teaching[2]

As Primary Instructor in Michigan, I had to organized the course which included two classes of about 110/120 students together with another Professor and three supporting students. My colleague and I decided (*i*) the course structure, (*ii*) the lab experiments to perform in class; (*iii*) the lab experiments that the supporting students carried; (*iv*) the weekly homework; and (*v*) we prepared and supervised the exams.

Example of teaching evaluations from the course taught in 2012:
• I like this class a lot, it made me think about possibly majoring in astronomy. • The teachers engaged the students on a daily basis, rather than simply lecturing to us. • The instruction was great... Elena was very passionate/ knowledgeable about the material and had a good presence in the classroom. • I really liked Professor Rasia. Her teaching style was energetic and enthusiastic. She asked questions in class that gave us an opportunity to think about how an understanding of astronomical phenomenon could be applied to daily life as well, such as the effect of altitude on the quality of pasta. I also liked the dramatic music in the videos she found to help us understand various astronomical occurrences. • Professor Rasia was an excellent professor. She made sure that she said each point multiple times which really helped me. • Good use of videos and demonstrations to keep class focused. I-Clicker questions were helpful as well. • Great examples, a lot of opportunity to learn. • Very solid class that taught me a lot. • The instructor places a great effort into teaching the material well and this effort was evident during the lecture. Throughout the many lectures students were encouraged to briefly discuss the questions addressed. The brief discussions between the students as well as questions addressed to all the students opened dialogue between the instructor and students.

ADVISING

Graduate students:
2. Arya Farahi, Department of Physics, University of Michigan, 2014
1. Nhut Truong, Dipartimento di Fisica, Università Tor Vergata 2014-2017

Undergrad students:
20. Thomas Spoor (UROP[3] students. University of Michigan) 2012-13

[2] http://www.crlt.umich.edu/index.php
[3] Undergraduate Research Oppurtunity Project

19. Dan Mantica (UROP students. University of Michigan) 2012-13
18. Kevin Tebbe (UROP students. University of Michigan) 2012-13
17. Hernietta Pho (UROP students. University of Michigan) 2011-12
16. Mary Hemmeter (UROP students. University of Michigan) 2010-11
15. Dai Phuc Po (UROP students. University of Michigan) 2010-11
14. Dan Gantman (UROP students. University of Michigan) 2010-11
13. Bryce Ethan Anderson (Research projects, Univ. of Michigan) 2010-11
12. Sri Veluvolu (Research projects, University of Michigan) 2010-11
11. Andrew Burkhardt, (UROP students, University of Michigan) 2009-10
10. Srikanth Veluvolu (UROP students, University of Michigan) 2009-10
9. Gary Forman (Senior thesis, University of Michigan) 2009
8. Mitchell Adler (UROP student, University of Michigan) 2008-09
7. Martin Oghenovie Arienmughare (Senior thesis, UofM) 2007-08
6. Giuseppe Melfi (3-yrs Laurea thesis[4]. Bologna University) 2006
5. Angela Adamo (5-yrs Laurea thesis, Padova University) 2005
4. Anna Cibinel (5-yrs Laurea thesis, Padova University) 2005
3. Riccardo Brunino (5-yrs Laurea thesis, Padova University) 2005
2. Filippo Bonaventura (3-yrs Laurea thesis, Padova University) 2004
1. Tommaso Grassi (3-yrs Laurea thesis, Padova University) 2004

PROFESSIONAL ACTIVITIES

Person of Contact of the SWG1.1 within the Athena Collaboration
Panel member, NSF-AAG
Panel member, NASA-ADAP (Archival Data Analysis) (twice)
Panel member, NASA-ATP (Astrophysics Theory)
Panel member, NASA Chandra X-ray Observatory (twice)
Panel member, NASA Hubble Space Telescope
Panel member, Nustar Archive Research Opportunity (Italian Space Agency)
External Reviewer for NSF Post-Doctoral Fellowship
Panel member for the Michigan Society of Fellow 2009-10
Panel member for the Michigan Society of Fellow 2010-11
Panel member for the Michigan Society of Fellow 2011-12
Committee member for the Rackham Distinguish Dissertation 2010-11
Committee member for the Rackham Distinguish Dissertation 2011-12
Committee member for Rackham one-term Dissertation Fellowship 2013-14
Committee member for Graduate Awards 2013-14
(Cornwell, Franken, Terwillinger, and Wiedenbeck Prizes)
Poster Judge at the UROP event 2012
Poster Judge at the UROP event 2013
Reviewer for the Astrophysical Journal and Astrophysical Journal Letter;
Reviewer for Astronomy and Astrophysics;
Reviewer for Monthly Notices of the Royal Astronomical Society and
Monthly Notices of the Royal Astronomical Society Letters;

[4]The 3 years Laura thesis is a dissertation which requires 2-4 months dedicated entirely to work on the project, while the 5 years Laura Thesis is a more complex research project requiring 8-12 months

Reviewer for International Journal of Computational methods.
Promoter and Organizer of the Cluster Seminar Weekly Meeting 2006-07
Organizer of the Cluster Seminar Weekly Meeting (5^{th} Serie) 2012-13
Organizer of the Cluster Seminar Weekly Meeting (6^{th} Serie) 2013-14
Organizer of the Cluster Seminar Weekly Meeting (7^{th} Serie) 2014

COLLABORATION

Athena (Advanced Telescope for High Energy Astrophysics, PI: Nandra):
Member of the Science Working Group SWG 1.1 on "The astrophysics of galaxy group and clusters" – Person of Contact for the SWG1.2 on "The evolution of the cluster entropy profile"
Member of the Mission Performance Working Group (MWG 4) "End-to-end simulations"
Member of X-COP (XMM Cluster Outskirts Project, PI: Eckert)
Collaborator of CLASH (Cluster Lensing and Supernova survey with Hubble, PI: Postman)

OUTREACH

Contributor to the Italian Virtual Observatory .....
Contributor to the development of SMAC. The Code is accessible through JobRunner from the German Virtual Observatory (GAVO) .....
Saturday Morning Physics, 2008. The presentation was open to the general public ($\sim$ 400 participants), it was broadcasted to State Television and it is available for download at UoM-I-Tunes .....
Two hour lecture to two 5^{th} grade classes, Lonato 2014
Astrophysics/cosmology Expert at Ann Arbor Science & Skeptics: Scientists Fair 2014
Supporting Astronomer for guided tours at Margherita Hack Specola observing nights - Urania Carsica 2015
Contributor to the educational activities "Explore the cosmo" and "Stars go to school" at Margherita Hack Specola - Urania Carsica 2015
I always give permission to posting slides on line or webcasting my talks.

PUBLICATION LIST

Total citations to date (February, 2016):
– adsabs $\sim$ 1930 ($\sim$ 620 as first author)
5 papers topcited 150+
Average citation per first-author paper > 60
h index: 21

36. *The XMM Cluster Outskirts Project (X-COP). I. Cluster sample and analysis* by D. Eckert, S. Molendi, E. Pointecouteau, S. Ettori, S. Paltani, M. Bartelmann, H. Bourdin, S. De Grandi, C. Ferrigno, F. Gastaldello, V. Ghirardini, S. Ghizzardi, G. Hurier, J.-P. Kneib, P. Mazzotta, **E. Rasia**, M.

Roncarelli, M. Rossetti, C. Tchernin, and F. Vazza, submitted to A&A

35. *On the nature of hydrostatic equilibrium in galaxy clusters* by Biff V., Borgani S., Murante G., **Rasia E.**, S. Planelles, G.L. Granato, C. Ragone-Figueroa, A.M. Beck, M. Gaspari, K. Dolag, submitted to ApJ

34. *Neutral hydrogen in galaxy clusters: impact of AGN feedback and implications for intensity mapping* by Villaescusa-Navarro F., Planelles S., Borgani S., Viel M., **Rasia E.**, Murante G., Dolag K., Steinborn L., Biffi V., Beck A., Ragone-Figueroa C., 2016, *MNRAS*, 456, 3553

33. *Spectral-Imaging of Galaxy Clusters with Planck*, by H. Bourdin, P. Mazzotta, **E. Rasia**, 2015, *ApJ*, 815, 92

32. *The morphologies and alignments of gas, mass, and the central galaxies of CLASH clusters of galaxies* by Megan Donahue, Stefano Ettori, **Elena Rasia**, Jack Sayers, Adi Zitrin, Massimo Meneghetti, G. Mark Voit, Sunil Golwala, Nicole Czakon, Gustavo Yepes, Alessandro Baldi, Anton Koekemoer, Marc Postman, 2016, *ApJ*, in press.

31. *Cool Core Clusters from Cosmological Simulations*, **Rasia, E.**; Borgani, S.; Murante, G.; Planelles, S.; Beck, A. M.; Biffi, V.; Ragone-Figueroa, C.; Granato, G. L.; Steinborn, L. K.; Dolag, K., 2015, *ApJL*, 813L, 17

30. *A Multi-wavelength mass analysis of RCS2 J232727.6-020437, a* $\sim$ *3* $\times 10^{15}$ $M_{\odot}$ *galaxy cluster at z=0.7*, Sharon K., Gladders M.D., Marrone, D.P., Hoekstra H.,**Rasia E.**, Bourdin, H., Gifford, D.; Hicks, A. K.; Greer, C.; Barrientos, L. F.; Bayliss, M.; Carlstrom, J. E.; Gilbank, D. G.; Gralla, M.; Hlavacek-Larrondo, J.; Leitch, E.; Mazzotta, P.; Mroczkowski, T.; Muchovej, S. J. C.; Schrabback, T.; Yee, H. K. C., 2015, *ApJ*, 814, 21

29. *CLASH: The Concentration-Mass Relation of Galaxy Clusters*, Merten, J.; Meneghetti, M.; Postman, M.; Umetsu, K.; Zitrin, A.; Medezinski, E.; Nonino, M.; Koekemoer, A.; Melchior, P.; Gruen, D.; Moustakas, L. A.; Bartelmann, M.; Host, O.; Donahue, M.; Coe, D.; Molino, A.; Jouvel, S.; Monna, A.; Seitz, S.; Czakon, N.; Lemze, D.; Sayers, J.; Balestra, I.; Rosati, P.; Bentez, N.; Biviano, A.; Bouwens, R.; Bradley, L.; Broadhurst, T.; Carrasco, M.; Ford, H.; Grillo, C.; Infante, L.; Kelson, D.; Lahav, O.; Massey, R.; Moustakas, J.;**Rasia, E.**; Rhodes, J.; Vega, J.; Zheng, W.Merten, J., 2015, *ApJ*, 806, 4

28. *The MUSIC of CLASH: predictions on the concentration-mass relation*, Meneghetti M.,**Rasia E.**, Vega, J.; Merten, J.; Postman, M.; Yepes, G.; Sembolini, F.; Donahue, M.; Ettori, S.; Umetsu, K.; Balestra, I.; Bartelmann, M.; Bentez, N.; Biviano, A.; Bouwens, R.; Bradley, L.; Broadhurst, T.; Coe, D.; Czakon, N.; De Petris, M.; Ford, H.; Giocoli, C.; Gottlber, S.; Grillo, C.; Infante, L.; Jouvel, S.; Kelson, D.; Koekemoer, A.; Lahav, O.; Lemze, D.; Medezinski, E.; Melchior, P.; Mercurio, A.; Molino, A.; Moscardini, L.; Monna, A.; Moustakas, J.; Moustakas, L. A.; Nonino, M.; Rhodes, J.; Rosati, P.; Sayers, J.; Seitz, S.; Zheng, W.; Zitrin, A., 2014, *ApJ*, 797, 34

27. *Temperature Structure in the IntraCluster Medium from SPH and AMR simulations*, **Rasia E.**, Lau, Erwin T.; Borgani, Stefano; Nagai, Daisuke; Dolag, Klaus; Avestruz, Camille; Granato, Gian Luigi; Mazzotta, Pasquale; Murante, Giuseppe; Nelson, Kaylea; Ragone-Figueroa, Cinthia, 2014, *ApJ*, 791, 96

26. *On the Discrepancy between Theoretical and X-Ray Concentration-Mass*

Relations for Galaxy Clusters, **Rasia, E.**, Borgani, S., Ettori, S., Mazzotta, P., Meneghetti, M., 2013, *ApJ*, 776, 39

25. *The Hot and Energetic Universe: The evolution of galaxy groups and clusters*, Pointecouteau, E.; Reiprich, T. H.; Adami, C.; Arnaud, M.; Biffi, V.; Borgani, S.; Borm, K.; Bourdin, H.; Brueggen, M.; Bulbul, E.; Clerc, N.; Croston, J. H.; Dolag, K.; Ettori, S.; Finoguenov, A.; Kaastra, J.; Lovisari, L.; Maughan, B.; Mazzotta, P.; Pacaud, F.; de Plaa, J.; Pratt, G. W.; Ramos-Ceja, M.; **Rasia, E.**; Sanders, J.; Zhang, Y.-Y.; Allen, S.; Boehringer, H.; Brunetti, G.; Elbaz, D.; Fassbender, R.; Hoekstra, H.; Hildebrandt, H.; Lamer, G.; Marrone, D.; Mohr, J.; Molendi, S.; Nevalainen, J.; Ohashi, T.; Ota, N.; Pierre, M.; Romer, K.; Schindler, S.; Schrabback, T.; Schwope, A.; Smith, R.; Springel, V.; von der Linden, A. 2013, ArXiv: 1306.2319 I contributed to make Fig.1 and Fig. 4 (over 4 total figures)

24. *The Hot and Energetic Universe: A White Paper presenting the science theme motivating the Athena+ mission*, Nandra, Kirpal, et al. (239 authors including **E. Rasia**) 2013, ArXiv: 1306.2307

23. *X-ray Morphological Estimators for Galaxy Clusters*, **E. Rasia**, M. Meneghetti, S. Ettori, 2013, *AstRv*, 8, 40 (Invited paper)

22. *Lensing and X-Ray Mass Estimates of Clusters: Simulations*, **E. Rasia**, M. Meneghetti, R. Marino, S. Borgani, A. Bonafede, K. Dolag , S. Ettori, D. Fabjan, C. Giocaoli, P. Mazzotta, J. Merten, M. Radovich, L. Tornatore, 2012, *NJPh*, 14, 5018, published as part of focus issues on "Cluster of Galaxies" of the New Journal of Physics (Invited paper and paper selected on the basis of referee endorsement, novelty, scientific impact, and broadness of appeal for inclusion in the Highlights of 2012 collection)

21. *Pointing to the minimum: the generalized scaling relation for galaxy clusters*, S. Ettori, **E. Rasia**, D. Fabjan, S. Borgani, K. Dolag, 2012, *MNRAS*, 420, 2058

20. *Temperature Structure and Mass-Temperature Scatter in Galaxy Clusters*, D. Ventimiglia, G. M. Voit, **E. Rasia**, 2012, *ApJ*, 747, 123

19. *X-ray mass proxies from hydrodynamic simulations of galaxy clusters - I*, Fabjan, D.; Borgani, S.; **Rasia, E.**; Bonafede, A.; Dolag, K.; Murante, G.; Tornatore, L., 2011, *MNRAS*, 416 ,801

18. *Scaling Relation in Two Situations of Extreme Mergers*, **Rasia, E.**; Mazzotta, P.; Evrard, A.; Markevitch, M.; Dolag, K.; Meneghetti, M., 2011, *ApJ*, 729, 45

17. *On the Baryon Fractions in Clusters and Groups of Galaxies*, X. Dai, J.N. Bregman, S. C. Kochanek, **E. Rasia**, 2010, *ApJ*, 719, 119

16. *Massive halos in Millennium Gas simulations: multivariate scaling relations*, R. Stanek, **E. Rasia**, A. E. Evrard, F. Pearce, L. Gazzola, 2010, *ApJ*, 715, 508

15. *Weighing simulated galaxy clusters using lensing and X-ray*, M. Meneghetti, **E. Rasia**, J. Merten, F. Bellagamba, S. Ettori, P. Mazzotta, K. Dolag, S. Marri, 2010, *A&A*, 514, 93

14. *Imprints of recoiling massive black holes on the hot gas of early-type galaxies* , B. Devecchi, **E. Rasia**, M.Dotti, M. Volonteri, M. Colpi, 2009, *MNRAS*, 394, 633

13. *Diffuse Baryonic Matter Beyond 2020*, Markevitch, M.; Nicastro, F.;

Nulsen, P.; **Rasia, E.**; Vikhlinin, A.; Kravtsov, A.; Forman, W.; Brunetti, G.; Sarazin, C.; Elvis, M.; Fabbiano, G.; Hornschemeier, A.; Brissenden, R., 2009, astro 2010 (arXiV: 0902.3709)

12. *X-MAS2: Study Systematics on the ICM Metallicity Measurements*, **E. Rasia**, P. Mazzotta, H. Bourdin, S. Borgani, L.Tornatore, S. Ettori, K. Dolag, L. Moscardini, 2008, *ApJ*, 674, 728

11. *Effects of Selection and Covariance on X-ray Scaling Relations of Galaxy Clusters*, Nord, B.; Stanek, R.; **Rasia, E.**; Evrard, A. E., 2008, *MNRAS*, 383, 10L

10. *Virial Scaling of Massive Dark Matter Halos: why Clusters prefers a high Normalization Cosmology?*, A.E. Evrard, J. Bialek, M. Busha, M. White, S. Habib, K. Heitmann, M. Warren, **E. Rasia**, G. Tormen, L. Moscardini, C. Power, A.R. Jenkins, C.S. Frenk, V. Springel, S.D.M. White, J. Diemand, 2008, *ApJ*, 672, 122

9 *Radial profile and log-normal fluctuations of intra-cluster medium as an origin of systematic bias of spectroscopic temperature*, H. Kawahara, Y. Suto, T. Kitayama, S. Sasaki, M. Shimizu, **E. Rasia**, K. Dolag, 2007, *ApJ*, 659, 257

8 *Simulating the physical properties of dark matter and gas inside the cosmic web*, K. Dolag, M. Meneghetti, L. Moscardini, **E. Rasia**, A. Bonaldi, 2006, *MNRAS*, 370, 656

7 *Systematics in the X-ray Cluster Mass estimators*, **E. Rasia**, S. Ettori, L. Moscardini, P. Mazzotta, S. Borgani, K. Dolag, G. Tormen, L.M. Cheng, A. Diaferio, 2006, *MNRAS*, 369, 2013

6 *Mismatch between X-ray and emission-weighted temperatures in galaxy clusters: cosmological implications*, **E. Rasia**, P. Mazzotta, S. Borgani, L. Moscardini, K. Dolag, G. Tormen, A. Diaferio, G. Murante, 2005, *ApJ Lett.*, 618L, 1

5*Comparing the temperatures of galaxy clusters from hydro-N-body simulations to Chandra and XMM-Newton observations*, P. Mazzotta, **E. Rasia**, L. Moscardini, G. Tormen, 2004, *MNRAS*, 354, 10

4 *A dynamical model for the distribution of dark matter and gas in galaxy clusters*, **E. Rasia**, G. Tormen, L. Moscardini, 2004, *MNRAS*, 351, 237

3 *Thermal Conduction in Simulated Galaxy Clusters*, K. Dolag, M. Jubelgas, V. Springel, S.Borgani, **E. Rasia**, 2004, *Apj Lett.*, 606L, 97

2 *Simulating Chandra observations of Galaxy Clusters*, A. Gardini, **E. Rasia**, P. Mazzotta, G. Tormen, S. De Grandi, L. Moscardini, 2004, *MNRAS*, 351, 505

1 *The impact of cluster mergers on arc statistic*, E. Torri, M. Meneghetti, M. Bartelmann, L. Moscardini, **E. Rasia**, G. Tormen, 2004, *MNRAS*, 349, 476

Conference proceeding or abstract:

37. *High-Resolution Simulations: Modeling Intracluster Medium and Dark Matter in Galaxy Cluster*, **Rasia E.**, 2003, MSAIS, 1, 176

38. *Dynamics of the ICM in galaxy Clusters*, Tormen, G. Moscardini, L.: **Rasia, E.**; 2003, MSAIS, 1, 209

39. *Arc statistics with realistic cluster models*, Meneghetti, Massimo; Bartelmann, M.; Moscardini, L.; **Rasia, E.**; Tormen, G.; Torri, E., 2003astro.ph, 5047; appeared in "Gravitational Lensing: A Unique Tool For Cosmology",

Aussois 2003, eds. D. Valls-Gabaud & J.-P. Kneib
40. *Thermal Conduction in Simulated Galaxy Clusters*, Dolag, K.; Jubelgas, M.; Springel, V.; Borgani, S.; **Rasia, E.**, 2004, cosp, 35, 2184
41. *Modeling DM and ICM in simulated galaxy clusters*,**Rasia E.**; Tormen G.; Moscardini, L.; 2004, ogci.conf, 309
42. *Simulating Chandra observations of galaxy clusters*, **Rasia, E.**; Gardini, A.; Mazzotta, P.; Tormen, G.; de Grandi, S.; Moscardini, L., 2004. ogci.conf, 313
43. *Comparing the temperatures of galaxy clusters from hydro-N-body simulations to Chandra and XMM-Newton observations*; Mazzotta, P.; **Rasia, E.**; Moscardini, L.; Tormen, G., 2004, astro-ph/0409618
44. *Spectroscopic-Like Temperature of Clusters of Galaxies and Cosmological Implications*; Mazzotta, P.; **Rasia, E.**; Borgani, S.; Moscardini, L.; Dolag, K.; Tormen, G.; 2004, astro-ph/0412536
45. *Bias on Estimates of X-ray Cluster Mass*; **Rasia, E.**; Ettori, S.; Moscardini, L.; Mazzotta, P.; Borgani, S.; Dolag, K.; Tormen, G.; Cheng, L. M.; Diaferio, A.; 2006, EAS, 20, 295
46. *Observing Metallicity in Simulated Clusters with X-MAS2*; **Rasia, E.**; Mazzotta, P.; Bourdin, H.; Ettori, S.; Borgani, S.; Dolag, K.; Moscardini, L.; Sauvageot, J. L.; Tornatore, L.; 2007, hvcg.conf, 365
47. *Influence of Covariance and Selection on Cluster X-ray Scaling Relations*; Nord, Brian; Stanek, Becky; **Rasia, Elena**; Evrard, Gus; Gazzola, Lorena; Pearce, Frazer, 2007, xsea.confE, 41
48. *The Many Faces of Galaxy Clusters: Mock Observations of Cluster Populations in Multiple Wavelengths*; Nord, Brian; Evrard, A. E.; **Rasia, E.**; Stanek, R.; 2008, AAS, 212, 210
49. *Average Baryon Fractions for 4000 2MASS Groups and Clusters*, Dai, X.; Bregman, J. N.; Kochanek, C. S.; **Rasia, E.**; 2010, HEAD, 11, 3419
50. *X-ray Mass Proxies From Hydrodynamic Simulations Of Galaxy Clusters*,**Rasia E.**; 2011, AAS, 21831903
51. *Cluster Of Galaxies: Lensing And X-ray Mass Estimates, C-m Relation*; **Rasia, Elena**; Meneghetti, M.; Borgani, S.; Ettori, S.; 2012, AAS, 21933825
52. *Intrinsic and observed concentration-mass relation*; **Rasia, E.**; Meneghetti, M.; Borgani, S.; Ettori, S.; 2012, AAS, 22050701
53. *Temperature Structure Characterization*, **Elena Rasia**, 2012, cxo, prop,4269
54. *X-ray concentration-mass relation: theory and observations*, **Rasia, Elena**; Meneghetti, Massimo; Mazzotta; Ettori, Stefano; Borgani, Stefano 2012, hcxa.conf, 53
55. *Reconciling extremely different concentration-mass relations*, Massimo Meneghetti & **Elena Rasia**, arXiv:1303.6158
56. *X-Ray c-M Relation: Theory & Observations*; **Rasia, E.**; Mazzotta, P.; Borgani, S.; Ettori, S.; Meneghetti, M., 2013, sncl.conf, 15
57. *Lensing Analysis of Simulated Galaxy Clusters*, Meneghetti, M.; **Rasia, E.**; Giocoli, C.; Vega, J.; Ettori, S.; Mazzotta, P.; Borgani, S.; Killedar, M.; Carrasco, M.; Coe, D.; Merten, J.; Melchior, P.; 2013, sncl.conf, 51
58. *X-Ray Analysis of Simulated Clusters*, **Rasia, E.**; Borgani, S.; Dolag, K.; Ettori, S.; Mazzotta, P.; Meneghetti, M.; 2013, tcec.conf, 5
59. *From X-ray Observables to Mtot In Galaxy Clusters: Biases and Re-*

sults; Ettori, S.; Baldi, A.; Borgani, S.; Dolag, K.; Eckert, D.; Fabian, D.; Gastaldello, F.; Molendi, S.; Moretti, A.; **Rasia, E.**; Planelles, S.; Roncarelli, M.; Vazza, F.; 2013, tcec.conf, 111

60 *Evolution of Entropy Profiles in Simulated Clusters*; Rasia, Elena; Troung, Nhut; Borgani, Stefano; Planelles, Susana; Biffi, Veronica; Murante, Giuseppe; Mazzotta, Pasquale; Bourdin, Herve, 2013, eheu.conf, 18

CONTRIBUTION LIST

92 Galaxy Cluster Meeting, Cambridge, UK, ... 12/2016

91. "4th Physics of the Intracluster Medium: Theory and Computation" Workshop, Minneapolis (**Invited Oral contribution**) 08/2016

90. "Galaxy Cluster Outskirts" Athens, Greece (**Invited Review** at EWASS) 07/2016

89 Seminar at Observatory of Arcetri, Florence, IT 06/2016

88. Seminar at the Observatory of Bologna, Italy 03/2016

87. Colloquium at the department of Physics, University of Miami 02/2016

86. 2015 JSI Workshop "The Physics ofSupermassive Black Holes Formation & Feedback" (Oral Contribution), Annapolis (MD), USA 10/2015

85. Conference ""Exploring the Hot and Energetic Universe:
The first scientific conference dedicated to the Athena X-ray observatory" (Oral Contribution) Madrid, Spain 09/2015

84. Conference "Cosmological simulations: from galaxies to large scales" (**Invited Oral Contribution**) Sexten Center for Astrophysics 07/2015

83. Workshop 'ICM physics and modelling" (Oral Contribution)
Munich, Germany 06/2015

82. Astro@TS 2015 meeting (**Invited Review**), Trieste, Italy 06/2015

81.LIX Congresso della Società Astronomica Italian (**Invited talk**)
Catania, Italy 05/2015

80. Conference "SnowCluster 2015: The Physics of Galaxy Clusters" (Oral Contribution) Utah, US 03/2015

79. Colloquium at the Observatory of Trieste, Italy 03/2015

78. Hydrosim Meeting (Oral Contribution) Trieste, Italy 02/2015

77. Conference "Cosmology with Galaxy Cluster in the XXI Century" (Oral Contribution) Madrid, Spain 11/2014

76. Colloquium at University of Michigan, Astronomy Department,
Ann Arbor, US 11/2014

75. Invited speaker, Workshop "3rd ICM Theory and Computation",
Copenhagen, Denmark 08/2014

74. Invited at Workshop "nIFTy Cosmology", Madrid, Spain 07/2014

73. Conference "Zeldovich 100, Cosmology and Relativistic Astrophysics" (Oral Contribution) Moskow, Russia 06/2014

72. Workshop, "Athena- Kick off Meeting", Garching, Germany 01/2014

71.Invited Speaker, Conference "Tracing Cosmic Evolution with Clusters of Galaxies" Sexten, Italy 07/2013

70.Invited Speaker, Conference "The mass profiles of galaxy clusters from the core to the outskirts: the need for a multi-wavelength

analysis", Madonna di Campiglio, Trento, Italy 03/2013
69. Conference "Snowcluster 2013: The Physics of Galaxy Clusters" (Oral contribution) Utah, US 03/2013
68.Colloquium at Ohio University, Athens,US 01/2013
67.Invited speaker Workshop "2nd ICM Theory and Computation Workshop" Ann Arbor, MI, US 08/2012
66. Conference "Star Formation and gas reservoir in nearby groups" (Oral contribution) Union College, NY, US, ... 07/2012
65. Target Contribution at Conference "Half century of X-ray astronomy" Mykonos, Greece 09/2012
64.Colloquium at University of Trieste XX/2012
63.Seminar at Yale University , US ..... May 2012
62. High-Energy **Seminar** at the Center for Astrophysics, Harvard May 2012
61.Colloquium at University of Texas, San Antonio, TX, US 03/2012
60.Colloquium at Indiana University, Bloomington, IN, US 03/2012
59.219th American Astronomical Society meeting (Oral Contribution) Austin, Tx, US 01/2012
58.Invited speaker, Conference "SZEHuntsville 2011" (Oral Contribution) Huntsville, AL, US 09/2011
57. Conference "Structure in Clusters and Groups of Galaxies in the Chandra Era" Boston, MA, US 07/2011
56. Conference "New Generation of Galaxy Clusters Surveys" (Oral Contribution) Sexten, Italy 07/2011
55.218th American Astronomical Society meeting (Oral Contribution) Boston, US 05/2011
54.KIPT Workshop "Cluster of Galaxies: the crossroad of Astrophysics and Cosmology" CA, US 02/2011
53.Colloquium at the Michigan Society of Fellow, UoM, MI, US ..11/2010
52. Conference"The future of Cosmology with Large-Scale Survey" (Oral Contribution) Sexten, Italy 07/2010
51. Astrophysics **Seminar** at CIERA, Northwestern University, IL, US 04/2010
50. Conference "Snowcluster" (Oral Contribution) Utah, US 03/2010
49. Lunch Talk at the Michigan Society of Fellow, University of Michigan, US 2009
48.Colloquium, Astronomy Department, University of Bologna, Italy 11/2008
47. Conference "NOVICOSMO 2008 :The Impact of Simulations in Cosmology and Galaxy Formation" (Oral Contribution) Trieste, Italy 10/2008
46."Chandra Fellow Symposium 2008" (**Invited Contribution**) Cambridge, MA, USA 10/2008
45."Great Lakes Cosmology IX" (Oral Contribution) Pittsburgh, Pennsylvania, USA 06/2008
44. Astrophysics **Seminar** at Astronomy Department, University of Washington, Seattle, WA, US 06/2008
43. High-Energy **Seminar** at CfA, Boston, US 05/2008
42. Conference "Hot & Warm Universe" (Oral Contribution) New York, NY, USA 05/2008
41. Hydro-SIM Workshop (Oral Contribution) Trieste, Italy 04/2008
40. Colloquium at INAF-Observatory of Trieste, Trieste, Italy ... 03/2008

39.Seminar at Physics Department of University of Iowa, Iowa City, IO, US 02/2008
38. Conference "Surveys and Simulations of Large-Scale Structure" Berkeley, CA, USA 01/2008
37. Conference "Cosmic Cartography: Mapping the Universe from the Big Bang to the Present" (Oral Contribution) Chicago, IL, USA ... 12/2007
36.Seminar at Physics and Astronomy Department of Michigan State University, Lansing, USA 11/2007
35. Chandra Fellows Symposium 2007 (**Invited Contribution**) Boston, Cambridge, MA, USA 10/2007
34. Summer School "NOVICOSMO 2007: Fiat Lux – formation and evolution of cosmic structures" 09/2007
33. Conference "Tracing Cosmic Evolution with Clusters of Galaxies: Six Years Later" (Oral Contribution) Sesto, BZ, Italy 07/2007
32. Workshop "Great Lakes Cosmology Workshop 8" (Oral Contribution) Columbus, Ohio, USA 06/2007
31. Astronomy **Colloquium** at the Department of Physics and Astronomy, Waterloo, ON, Canada 03/2007
30. Conference "Galaxy Clusters as Cosmological Probes" (Oral Contribution) Aspen, Colorado, USA 02/2007
29. Seminar at Physics and Astronomy Department of Michigan State University, Lansing, USA 02/2007
28. Workshop "Computational Cosmology" (Oral Contribution) Leiden, Holland, ... 01/2007
27. Chandra Fellows Symposium 2006 (**Invited Contribution**) Boston, Cambridge, MA, USA 10/2006
26. MPA/ESO/MPE/USM Joint Astronomy Conference: "Heating vs. Cooling in Galaxies and Clusters of Galaxies" in Garching, Germany 08/2006
25. XLIst Rencontres de Moriond, XXVIth Astrophysics Moriond Meeting: "From Dark Halos to Light" (Oral Contribution) La Thuile, Aosta Valley, Italy 03/2006
24. High-Energy **Seminar**, Physics Department, University of Michigan, Ann Arbor, MI, US 11/2005
23. Ringberg Workshop "Distant Clusters of Galaxies" (**Invited Oral contribution**)
Ringberg Schloss, Rottach-Egern, Germany 10/2005
22. Astrophysics **Seminar**, Physics Department, University of Tor Vergata, Roma, Italy 09/2005
21. 21st IAP Colloquium "Mass Profiles and Shapes of Cosmological Structures" (Poster) Paris, France 07/2005
20. Seminar at the Institut fuer Theoretische Astrophysik, Heidelberg, Germany 06/2005
19. Conference " Computational Cosmology" (Poster) Miramare, Trieste, Italy 06/2005
18. Workshop "Luminous and dark matter in galaxies and clusters of galaxies" (Oral Contribution) Bologna, Italy 05/2005
17. PhD National School of Astrophysics "Observational Cosmology at Large Scale – Distance Scales" (Poster) Sant'Agata sui due Golfi,

Napoli, Italy 05/2005
16. Seminar at the Max-Plank fuer Astrophysics Garching, Germany 04/2005
15. Centre of excellence-MIUR "Science and Applications of Advanced Computing Paradigm" (Oral Contribution) Padova, Italy 10/2004
14. COFIN 2004 meeting (Oral Contribution) Bertinoro, Italy 10/2004
13. PhD National School of Astrophysics " Cosmological Parameters – Extra-solar Planets" (Oral Contribution) Asiago, Vicenza, Italy ... 09/ 2004
12. IAU Colloquium n. 195 "Outskirts of Galaxy Clusters: Intense Life in the Suburbs" (Oral Contribution & Poster) Torino, Italy 03/2004
11. COFIN 2001 "Groups and Clusters of Galaxies: connection between dark and baryonic matter" Final Meeting (Oral Contribution), Bologna, Italy 12/2003
10. Vulcano Workshop "Modelling the intergalactic and the intra-cluster medium' (two Oral Contributions), Vulcano Island, Sicily, Italy 10/2003
9. "Frontiers of the Universe: Cosmology 2003", Cargese, Corse, France International PhD school 09/2003
8. "5^{th} Giambiagi Winter School of Physics: Precision Cosmology" (Poster) Buenos Aires, Argentina 07/2003
7. PhD National School "Local group galaxies – New Generation Telescopes" Marcian Marina, Livorno, Italy 05/2003
6. Seminar at Department of Physics, University of Durham, UK . 03/2003
5. PhD National School "Cosmology – Relativistic Astrophysics" (Oral Contribution) Asiago, Italy 09/ 2002
4. National Workshop of Computational Astrophysics (Oral presentation) Bologna, Italy 07/2002
3. Phd National School "Turbulence in Space Plasmas – Galaxies and Galaxy Systems", Cetraro, Cosenza, Italy 06/2002
2. COFIN 2001 meeting "Groups and Clusters of Galaxies: connection between dark and baryonic matter (Oral presentation) Padova, Italy 04/2002
1. PhD National School "Cosmology – Elementary Particles", Bertinoro, Italy 10/2001