

PERSONAL INFORMATION:

Lauro Moscardini, Italian nationality.

ORCID 0000-0002-3473-6716

ABSTRACT:

The scientific activity has been mainly focused in the theoretical study of the formation of cosmic structures and its implications for the cosmological models.

Main research interests: determination of the cosmological parameters using the properties of galaxy clusters (counts, spatial distribution, velocity field); high-resolution hydrodynamical simulations of galaxy clusters (thermal structure, X-ray properties, Sunyaev-Zel'dovich effect, dynamical models); gravitational lensing from galaxy clusters (statistics of gravitational arcs, optimal filtering); cosmological modelling (extended study of non-Gaussian models and tilted/antitilted models; dark energy models; cosmic degeneracy); theoretical modelling of the clustering evolution of cosmic structures and constraints on the cosmological parameters from the comparison with observational data (high-redshift galaxies, Lyman-break galaxies, galaxy clusters observed in optical, X-ray and millimetric bands, quasars); implementation of N-body and hydrodynamical codes; models for the perturbation evolution.

HIGHLIGHTS (as of February 2020):

Full Professor, Department of Physics and Astronomy, University of Bologna
256 refereed papers in international journals.

Citations:

SAO/NASA ADS: total 10911; H index 56

Web of Science: total: 9505; H index 51

Scopus: total 8862; H index 49

Google Scholar: total 14504; H index 61

35 seminars/colloquia/invited talk in international institutions/meetings in the last 10 years.

List of the 5 most important publications in the career:

- Moscardini L., Matarrese S., Lucchin F., Messina A., 1991, Non-Gaussian initial conditions in cosmological N-body simulations: II. Cold Dark Matter Models. *MNRAS*, 248, 424-438.
- Moscardini L., Coles P., Lucchin F., Matarrese S., 1998, Modelling galaxy clustering at high redshift. *MNRAS*, 299, 95-110.
- Arnouts S., Cristiani S., Moscardini L., Matarrese S., Lucchin F., Fontana A., Giallongo E., 1999, *MNRAS*, 310, 540-556.
- Borgani S., Murante G., Springel V., Diaferio A., Dolag K., Moscardini L., Tormen G., Tornatore L., Tozzi P., 2004, X-ray properties of galaxy clusters and groups from a cosmological hydrodynamical simulation. *MNRAS*, 348, 1078-1096.
- Mazzotta P., Rasia E., Moscardini L., Tormen G., 2004, Comparing the temperatures of galaxy clusters from hydro-N-body simulations to Chandra and

XMM-Newton observations. MNRAS, 354, 10-24.

EDUCATION:

1989: PhD, Astronomy, University of Bologna;
1986: Laurea in Astronomia, University of Bologna;

CURRENT POSITION:

Since 09/2016: Full Professor, University of Bologna

PREVIOUS POSITIONS:

2001-2016: Associate Professor, University of Bologna
1991-2001: Researcher, University of Padova
1990-1991: Postdoc, University of Sussex

TEACHING ACTIVITIES:

Courses on Cosmology and Numerical methods for Astronomy at the University of Bologna
Courses on Cosmology, Statistical Astronomy, Astrophysics at the University of Padova
Course on Astrophysics at the University of Pavia
Lectures for PhD students at different national and international schools

**SUPERVISION OF UNDERGRADUATE AND GRADUATE STUDENTS,
POSTDOCTORAL FELLOWS:**

Supervisor/co-supervisor of 121 Master students;
Supervisor/co-supervisor of 20 PhD students;
Supervisor of 2 postdoctoral fellows per year on average.

INSTITUTIONAL RESPONSABILITIES:

Director of the First and Second cycle degrees in Astronomy/Astrophysics at UNIBO from 2016
Director of the PhD School in Astrophysics at UNIBO from 2007 until 2015
Member of the board of the Centre of Excellence "Science and application of advanced computational paradigms" at the University of Padova, funded by MIUR in the period 2001-2004
Responsible for 'High Education', Istituto Nazionale di Astrofisica (INAF) from 2006 until 2012

ORGANIZATION OF SCIENTIFIC MEETINGS AND SCHOOLS:

Scientific Secretary of the National School in Astrophysics F. Lucchin
Scientific Secretary of the National School in Astroparticles (for PhD students)
Member of the Organizing Committee of different National and International meetings and Schools.

COMPETITIVE GRANTS:

PRIN MIUR 2017: Zooming into Dark Matter and proto-galaxies with massive lensing clusters. Local coordinator
PRIN INAF 2012: The Universe in a box: multi-scale simulations of cosmic structures. Local coordinator
FP7-PEOPLE-2011-IEF: Simulating the Dark Universe. Scientific coordinator;
FP7-ERC-2010-StG_20091028: Gravitational Lensing as a Cosmological Probe. Coordinator contact;
PRIN INAF 2009: Towards an Italian network for computational cosmology. Local Coordinator
ASI 2007/08 call inside the contract I/088/06/0 "High Energy Astrophysics": Modelling the properties of baryon gas in the large scale structure of the universe. Principal Investigator;
PRIN MIUR 2001: Clusters and groups of galaxies: the connection between dark matter and bars. Local Coordinator;
PI of the italian-german projects funded inside the VIGONI call 2005 and 2009;
PI of the italian-american project funded by the Italian minister for foreign affairs in 2008

COMMISSIONS OF TRUSTS:

Member of the Committee for National Scientific Qualification ASN, SC 02/C1, 2018-2020;
Member of the GeV02 for the National Evaluation of Research VQR 2011-2014 for the National Agency ANVUR;
Member of the GeV02 for the National Evaluation of Research VQR 2004-2010 for the National Agency ANVUR;
Member of the INAF/CINECA, ISCRA and PRACE TAC for the assignment of supercomputing time;
Member of the Editorial Board of Mem. S.A.I.T.;
Referee for the most important astrophysical journals (ApJ, MNRAS, A&A, Phys. Rev D., Astroparticle Physics, Galaxies);
Referee for international grant applications (ERC, NATO, UK, Switzerland, Poland);
Referee for national grant applications (PRIN, FIRB, SIR, Levi Montalcini, FARE, CIVR, ANVUR, many universities);
Member of different panels for permanent and temporary positions;
Referees for different PhD theses (Spain, France, Germany, UK, Italy)

MAJOR COLLABORATIONS:

Founder of the ESA mission Euclid;
Coordinator of the SWG on Galaxy Clusters for the ESA mission Euclid;
Member of the Steering Committee of the ESA project DUNE (then merged in Euclid);
Coordinator of the DUNE WG on Simulations