

Stefano Borgani

Department of Astronomy

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Education

1992 Ph.D. in Astronomy; International School for Advanced Studies (SISSA-ISAS), Trieste, Italy;

Advisor: Prof. G.F.R. Ellis

1990 Master in Astrophysics; International School for Advanced Studies (SISSA-ISAS), Trieste, Italy;

Advisor: Prof. G.F.R. Ellis

1988 Graduation in Physics; Department of Physics, University of Perugia, Italy; Advisor: Prof. S.A. Bonometto

Positions

2002-present: Associate Professor, Department of Astronomy and Astrophysics, University of Trieste, Trieste (Italy)

1991-2002: staff researcher at the National Institute of Nuclear Physics, Perugia (Italy)

1992-1995: research associate, International School for Advanced Studies (SISSA), Trieste (Italy)

Research Interests

Theoretical cosmology: formation of large-scale structure in the Universe; formation and properties of galaxies and galaxy clusters; large supercomputer simulations; statistical properties of the large-scale structure; high-energy physics motivated models of Dark Matter.

Scientific activity

- Author of above 100 articles on refereed journal, among which five review articles published in Physics Reports, Nature, Annual Review of Astronomy and Astrophysics and Space Science Review.
- About 40 invited talks at Conferences and Schools
- About 40 invited colloquia at different Institutes

Professional Service

- Chair of the organization of 4 Conferences
- Member of the Scientific Organizing Committee of 13 conferences
- Referee for The Astrophysical Journal, Monthly Notices of the Royal Astronomical Society, Astronomy & Astrophysics, Nature, Physical Review B, Physical Review Letters, Review of Modern Physics.
- Member of the Chandra Peer Review Panel (cycle A03) and of the XMM Peer Review Panel (cycle A03 and A04).
- Member of the INAF-CINECA Scientific Committee in the period 2001-2005.
- Member of the INAF-CINECA Steering Committee since 2005.
- Italian representative in the Steering Committee of the ASTROSIM (Simulations in Astrophysics) Network, founded by the European Science Foundation, since 2006.
- Member of the Theory/Simulations Panel for the “High-Energy Astrophysics Study” of the Italian Space Agency (2006-2008).
- Coordinator of the Workpackage on “Theory of Cosmic Structure Formation” within the

“Cosmology Study” of the Italian Space Agency (2006-2009).

- Member of the Data Analysis Panel for the Cosmic Structure Formation Study of the Italian Space Agency (2006-2009).
- National coordinator of the Research Project of National Interest (PRIN) “The Cosmic Cycle of Baryons” funded by the Italian Ministry of Research (2008-2010).
- Coordinator of the node in Trieste for the COSMOCOMP International Training Network, funded by the European Community within the Framework Program 7.

Supervision of students

- Supervisor for the Graduation Thesis of 4 students
- Supervisor of 11 Master students
- Supervisor of 8 PhD students

Activity in education/outreach

- Course of “Cosmology” for the graduation in Physics at the University of Perugia (from AY 1991/92 until AY 1997/98)
- Course of “Formation of Cosmic Structures” for the PhD in Physics at the University of Trieste (since AY 2000/2001)
- Course of “Physics of Galaxies” for the graduation in Physics (AY 2001/02)
- Course of “Galaxies and Systems of Galaxies for the Master degree in Astrophysics at the University of Trieste (since AY 2002/03)
- Course of “Numerical Methods for Astrophysics” for the Master degree in Astrophysics at the University of Trieste (since AY 2002/03)
- Course of “Formation of Cosmic Structures” for the PhD degree in Astrophysics at SISSA in Trieste (AY 2008/09)
- Speaker at four public talks for amateur astronomers and high school students

Selected publications

1. *Scaling in the Universe*

Borgani, S. 1995, *Physics Reports*, 251, 1

2. Light Gravitinos as Mixed Dark Matter

Borgani, S., Masiero, A., & Yamaguchi, M. 1996, *Physics Letters B*, 386, 189.

3. *X-Ray Galaxy Clusters and the Structure of the Universe*

Borgani, S., & Guzzo, L. 2001, *Nature*, 409, 39.

4. Correlation Analysis of SFI Peculiar Velocities

Borgani, S., da Costa, L.N., Zehavi, I., Giovanelli, R., Haynes, M., Freudling, W., Wegner, G., & Salzer, J.J. 2000, *AJ*, 119, 102.

5. *Measuring Ω_m with the ROSAT Deep Cluster Survey*

Borgani S., Rosati, P., Tozzi, P., Stanford, S.A., Eisenhardt, P.E., Lidman, C., Holden, B., Della Ceca, R., Norman, C., & Squires, G. 2001, *ApJ*, 561, 13.

6. *The evolution of X-ray clusters of galaxies*

Rosati, P., Borgani, S., & Norman, C. 2002, *Ann. Rev. Astron. Astrophys.*, 40, 539 .

7. The effect of non-gravitational gas heating in groups and clusters of galaxies

Borgani, S., Governato, F., Wadsley, J., Menci, N., Tozzi, P., Quinn, T., Stadel, J., & Lake, G., 2002, *MNRAS*, 336, 409

8. *X-ray properties of galaxy clusters and groups from a cosmological hydrodynamical simulation*

Borgani, S., Murante, G., Springel, V., Diaferio, A., Dolag, K., Moscardini, L., Tormen, G.,

Tornatore, L., Tozzi, P., 2004, MNRAS, 348, 1078

9. Entropy amplification from energy feedback in simulated galaxy groups and clusters

Borgani S., Finoguenov A., Kay S.T., Ponman T.J., Springel V., Tozzi P., & Voit G.M., 2005, MNRAS, 361, 233

10. Chemical enrichment of galaxy clusters from hydrodynamical simulations

Tornatore L., Borgani S., Dolag K., & Matteucci F. 2007, MNRAS, 382, 1050