

## Preface

Stefano Etori · Massimo Meneghetti

Published online: 14 June 2013  
© Springer Science+Business Media Dordrecht 2013

As the most massive gravitationally-bound objects in the Universe, galaxy clusters represent fundamental signposts in the history of cosmic structure formation and evolution. Solid knowledge of their gravitating and baryonic mass distributions is the key ingredient for using clusters as astrophysical laboratories and cosmological probes.

In 2010, we were successful in responding to the annual call by the International Space Science Institute (ISSI) and formed an international team of experts working on the X-ray and gravitational-lensing properties of galaxy clusters (team members: M. Bartelmann, H. Dahle, S. Etori/coordinator, H. Hoekstra, M. Limousin, M. Meneghetti, S. Molendi, R. Piffaretti, E. Pointecouteau, T. Reiprich, R. Schmidt; young scientists: S. Giodini, B. Miranda, H. Israel, A. Donnarumma, L. Lovisari; see <http://www.issibern.ch/teams/xraylens/Xray-Lens/Welcome.html>). Our intention was to meet in the very nice and comfortable environment of ISSI in Bern (CH) to share and discuss our common experience on the topic of the mass distribution in galaxy clusters. We started our activities in December 2010 and organized 3 meetings during 2011 and 2012 to define the contents and the structures of the review papers we proposed to write. The submission to referees and acceptance of the papers, that are now collected in this volume, occurred between August 2012 and April 2013.

In these 2 years of activity, we have collected and condensed original material that defines the state of the art of the investigated field and forms the basis for the future developments in the topic of the mass distribution in galaxy clusters.

As part of our activity, we have also organized an international conference in Madonna di Campiglio (18–22 March 2013; title: “The mass profiles of galaxy clusters from the core to

---

S. Etori (✉) · M. Meneghetti  
INAF—Osservatorio Astronomico di Bologna, via Ranzani 1, 40127, Bologna, Italy  
e-mail: [stefano.ettori@oabo.inaf.it](mailto:stefano.ettori@oabo.inaf.it)

M. Meneghetti  
e-mail: [massimo.meneghetti@oabo.inaf.it](mailto:massimo.meneghetti@oabo.inaf.it)

S. Etori · M. Meneghetti  
Sezione di Bologna, INFN, Viale Berti Pichat 6/2, 40127, Bologna, Italy

the outskirts: the need for a multi-wavelength approach"; <https://www.eiseverywhere.com/ehome/26651>) which was focused on mass distribution in galaxy clusters and involved the active participations of about 100 researchers from around the world.

The meetings and the discussions leading to the reviews that are now collected in this volume would have been out of reach without the wonderful opportunities and the enormous support provided by ISSI in the form of the pleasant meeting venue, the smooth organisation and the substantial financial contribution. We warmly thank all members of the ISSI staff who were friendly and generous hosts and made our meetings so enjoyable, in particular Rudolf von Steiger, Maurizio Falanga, Jennifer Zaugg, Saliba F. Saliba and Katja Schüpbach.

Publishing this volume has been only possible thank to the technical and organizational help provided by Hans Bloemen and Harry Blom, of the editorial board of the Space Science Review, and by the secretaries at Springer Lalitha Jaganathan and Nirmala Kumar.

May 2013

The editors