MPA/ESO/MPE/USM Joint Astronomy Conference on

Heating versus Cooling in Galaxies and Clusters of Galaxies

6–11 August 2006, Garching, Germany

The aim of the conference is a review of our knowledge of the physical processes controlling the state of the dense, central intracluster medium in galaxy clusters and to dicuss their analogy to feedback process in regulated galaxy formation.

Detailed multiwavelength observations suggest that the dense plasma regions at the centres of galaxy clusters, previously thought to harbour cooling flows, are subject to a delicate balance between heating and cooling, which substantially reduces mass condensation and star-formation rates. While these regions are quite complex, the rich observational detail now becoming available can guide understanding and modelling. The aim of this conference is to provide a synthesis of all the observational evidence and to confront it with astrophysical modelling. Analogous issues arise in the models of galaxy formation where the observed properties and the evolution of the galaxy population can only be explained if gas cooling and star formation are assumed to be regulated by feedback heating. The conference will explore possible connections between these two areas.

In recent years the effort to understand cluster cooling cores has grown both in terms of observation (in particular in X-rays with the Chandra and XMM-Newton satellites) and in terms of detailed numerical hydrodynamical simulations. A review of the state of the subject is thus timely. Also, in recent years it has been much more generally appreciated that the suppression of gas cooling in the centre of galaxy clusters may be a model for the effects of feedback in galaxy and structure formation in general. In our meeting we consequently broaden the view to include feedback and self-regulation during galaxy formation.

The wealth of new observational data and modelling results will provide the basis for the current meeting, which will include the following topics: (i) evidence for cooling, cold material, and star formation in the centres of galaxy clusters and elliptical galaxies with results from observations in X-rays, optical, IR, radio, and absorption studies), (ii) heating of central cluster regions by the AGN-intracluster medium interaction and by other processes, confrontation of modelling results with observed cooling core structure, (iii) diagnostics of the cooling core regions through the entropy structure of the intracluster medium and chemical enrichment as signatures of feedback heating in the past, (iv) the need for feedback regulation in galaxy formation, detailed comparison of model predictions and observations for the feedback during galaxy formation from both, stars/supernovae and from AGN.

Scientific Organising Committee:
M. Arnaud, M. Begelman, H. Böhringer, M. Donahue, A. Fabian, G. Hasinger, T. Heckman, C. Jones, B. McNamara, T. Ohashi, F. Owen, M. Pettini, T. Reiprich, A. Renzini, P. Rosati, C. Sarazin, N. Soker, R. Sunyeav, S. White

Visit out webpage: *http://www.mpe.mpg.de/~cool06*

Conference on

Precision Spectroscopy in Astrophysics

11–15 September 2006, Aveiro, Portugal

In the last decade we have witnessed impressive advancements in the accuracy of Doppler-shift measurements in astronomy and of high-precision spectroscopy in general.

The random measurement uncertainty depends on the inverse of the Signal-to-Noise ratio, therefore high accuracy requires a high photon flux and a large photon-collecting capability. As a consequence, not only the scientific domains using this technique benefit tremendously from the use of 8-m-class telescopes, but, also, they will fully exploit the tremendous gain provided by future Extremely Large Telescopes (ELTs), as clearly shown by the preliminary study of CODEX. Even if most applications so far have been at optical wavelengths, IR high-resolution spectroscopy should soon approach the same accuracy regime.

The goal of the conference is to gather together scientists to discuss all the scientific topics related to various aspects of high-precision spectroscopy (determination of Doppler shifts, accurate line profiles, isotopic ratios, etc.). In addition to presentations on the state of the art of research in the field, part of the programme will be devoted to future programmes and instruments, including those for ELTs. In addition to presenting their current results, we would like to ask all the speakers to highlight also their limitations and to indicate, when possible, future avenues to progress.

This ESO conference is co-organised with the Centre for Astronomy and Astrophysics (University of Lisbon) and the University of Aveiro.

Scientific Organising Committee: Beatriz Barbuy (Brasil), Jacqueline Bergeron (France), Dainis Dravins (Sweden), Artie Hatzes (Germany), Garik Israelian (Spain), David Lambert (USA), Michel Mayor (Switzerland), Paolo Molaro (Italy), Mario J. Monteiro (Portugal), Luca Pasquini (ESO, co-chair), Max Pettini (UK), Martino Romaniello (ESO, co-chair), Nuno C. Santos (Portugal, co-chair)

Conference webpage:
http://www.oal.ul.pt/psa2006
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