

6942

Multiwavelength observations of galaxy clusters
Mo 15.30-17, MPIfR, HS 0.01

Instructor(s): T. Reiprich, Y. Zhang, H. Andernach

For term nos.: 5 or higher

Hours per week: 2

Prerequisites:

Introductory Astronomy lectures.

Contents:

Aims of the course:

To introduce the students into the largest clearly defined structures in the Universe, clusters of galaxies. In modern astronomy, it has been realized that a full understanding of objects cannot be achieved by looking at just one waveband. Different phenomena become apparent only in certain wavebands, e.g., the most massive visible component of galaxy clusters -- the intracuster gas -- cannot be detected with optical telescopes. Moreover, some phenomena, e.g., radio outbursts from supermassive black holes, influence others like the X-ray emission from the intracluster gas. In this course, the students will acquire a synoptic, multiwavelength view of galaxy groups and galaxy clusters.

Contents of the course:

The lecture covers galaxy cluster observations from all wavebands, radio through gamma-ray, and provides a comprehensive overview of the physical mechanisms at work. Specifically, the following topics will be covered: galaxies and their evolution, physics and chemistry of the hot intracluster gas, relativistic gas, and active supermassive black holes; cluster weighing methods, Sunyaev-Zeldovich effect, gravitational lensing, radio halos and relics, and the most energetic events in the Universe since the big bang: cluster mergers.

Literature:

Lecture script and references therein.

Comments: