NRAO/Socorro Colloquium Series

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JSI

Physics of intracluster medium from high angular resolutuion X-ray studies

Abstract

Mergers of galaxy clusters -- some of the most energetic events in the Universe -- produce disturbances in hot intracluster medium, such as shocks and cold fronts, that can be used as tools to study the physics of galaxy clusters. X-ray observations of shock fronts provide information on the shock Mach number and velocity, and for well-observed shocks, constrain the microphysical properties of the intracluster plasma. Cold fronts may constrain viscosity and the structure and strength of the cluster magnetic fields. Combined with radio data, these observations also shed light on the production of ultrarelativistic particles that are known to coexist with the cluster thermal plasma. While cold fronts are commonly seen in merging and relaxed clusters, only a few unambiguous shock fronts have been seen in X-rays so far, and almost all of them have a coincident diffuse radio feature. This talk will summarize the current X-ray observations of cluster mergers, as well as some recent radio data and high-resolution hydrodynamic simulations.

April 10, 2015

11:00 am

Array Operations Center Auditorium

All NRAO employees are invited to attend via video, available in Charlottesville Auditorium, Green Bank Auditorium, and VLA Video Conference Room.

Local Host: Huib Intema