HEAD 2000, November 2000
Session 13. Clusters of Galaxies
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[13.22] X-ray Spectroscopy of Clusters of Galaxies with XMM-Newton

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We present high-resolution X-ray spectra with the Reflection Grating Spectrometer (RGS) and medium-resolution X-ray spectra and images with the European Photon Imaging Camera (EPIC) of clusters of galaxies. The RGS has the unique ability to produce high-resolution spectra of moderately extended objects. This has enabled detailed spectroscopy of compact and luminous clusters of galaxies. We present the first spectra of a selection of clusters that have been observed with the XMM-Newton. Through spatially-resolved spectroscopy, we constrain the temperature and density structure of the X-ray emitting gas. We make elemental abundance determinations and emission line optical depth measurements. We relate the measurements to cooling-flow models, discuss the dark matter fraction of clusters, and address the origin of the intergalactic medium.

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