

Clusters and Lenses: Analyzing Ten Gravitational Lensing Systems

Tuesday, 31 May 2011 13:50 (20 minutes)

In this presentation, we describe a study of ten strong gravitational lenses. A gravitational lens is a mass distribution which causes the deflection of light from a more distant astronomical source, sometimes forming a ring or an arc visible in space. In this case, all of the lenses are clusters of galaxies. These lensing systems were discovered in the Sloan Digital Sky Survey by the Sloan Bright Arcs Survey at Fermilab. We took data on these systems with much better resolution and reduced and calibrated the data. We then studied the properties of the galaxy clusters of which the lenses are a part and the properties of the strong lenses themselves. We present results for the number of galaxies in each cluster and for the masses and the velocity dispersions of the clusters. We also present results for the Einstein radii (the sizes of the visible arcs of light), masses and velocity dispersions of the strong lenses. Finally, we find a relation between the Einstein radii and the cluster masses and we compare this relation to the findings of other groups.

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