

Abstract Submitted
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Comparing the Distributions of Dark and Visible Matter in Galaxy Clusters in Search of DM Self-Interaction¹ ISABEL HORST, Brown University, SHENMING FU, Brown University, NSF Optical-Infrared Astronomy Research Laboratory, IAN DELL'ANTONIO, Brown University, LOVOCCS COLLABORATION — I investigate the role of dark matter (DM) in galaxy cluster formation and look for evidence of dark matter self-interaction by comparing the spatial distributions of dark and visible matter within massive galaxy clusters. Using data from the Local Volume Complete Cluster Survey (LoVoCCS) and the Large Survey of Space and Time (LSST) Science Pipelines software framework, the Brown Observational Cosmology Group has mapped mass distributions within several nearby galaxy clusters, which are around 80% DM by mass, via weak gravitational lensing. I compare this lensing signal with data from the Chandra X-Ray Observatory, which correlates to only visible matter, by plotting the locations of the strongest weak lensing and strongest X-Ray signal relative to the brightest central galaxy in each cluster. Any pattern in the distributions of DM, gas, and galaxies in these clusters may give us insight into the role of dark matter in galaxy cluster evolution.

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