



X-RAY ASTRONOMY 2019

Current Challenges and New Frontiers in the Next Decade

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X-rays from the Cosmic Web: The Case of Abell 133

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For years, detection of cosmic filaments has been an elusive target for observers. Although predicted by simulations and seen in the distribution of galaxies for decades, only a few statistically significant measurements of the diffuse web have been made, particularly in the X-ray regime. However, in a very deep (2.4 Ms) observation with Chandra around the cluster Abell 133 ($z=0.055$), we observed diffuse, filamentary structures extending beyond the cluster's virial radius. Due to the long exposure and high resolution of Chandra, these observations are a window into the capabilities of the next generation of X-ray satellites and, if these filaments are real, provide hope of soon being able to routinely observe cluster-feeding filaments. Here, we discuss the followup observations we have undertaken to confirm the presence of these filaments, the physical conditions we have inferred, and the possibilities for future missions in observing the cosmic web around clusters.

Topic

Hot and diffuse baryons

Affiliation

Observatories of the Carnegie Institution for Science

Primary author: CONNOR, Thomas (Observatories of the Carnegie Institution for Science)

Co-authors: Dr KELSON, Daniel (Observatories, Carnegie Institution for Science, Pasadena, CA, United States); Dr MULCHAEY, John (Observatories, Carnegie Institution for Science, Pasadena, CA, United States); Dr VIKHLININ, Alexey (Harvard-Smithsonian Center for Astrophysics, Cambridge, MA, United States)

Presenter: CONNOR, Thomas (Observatories of the Carnegie Institution for Science)

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