



X-RAY ASTRONOMY 2019

Current Challenges and New Frontiers in the Next Decade

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A Chandra Legacy Observation of N132D

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N132D is the most X-ray luminous supernova remnant (SNR) in the Local Group with a luminosity of L_x (0.3-10.0 keV) = 1.0×10^{38} ergs/s. Given its location in the Large Magellanic Cloud, it is a prime target for detailed X-ray studies with the Chandra X-ray Observatory. The existing 87 ks Chandra observation of N132D has revealed the complicated spatial and spectral structure of this SNR, but the depth of this observation limits the spatial scale on which detailed spectroscopy may be performed. We successfully proposed for a Chandra legacy observation (900 ks) of N132D that will permit an unprecedented look at the spatial distribution of iron and other heavy elements in the ejecta from this prototypical core-collapse supernova. Combined with supporting multiwavelength data (from radio to gamma rays), these data will inform many areas of active research, including late stages of massive star evolution, explosion mechanisms and dynamics, and physical mechanisms for the interaction of shocks with molecular clouds and cavities. As models of massive stars and their supernovae improve, observations such as the one proposed are the only way to constrain models of massive stars and their supernovae. We will present preliminary results from the observations performed to date.

Topic

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