Chandra Observations of the Galactic Oxygen-Rich Supernova Remnant G292.0+1.8

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Abstract

We present results from an observation of the young Galactic supernova remnant G292.0+1.8 with the Advanced CCD Imaging Spectrometer (ACIS) onboard *Chandra* X-ray Observatory. In the $0.2-8$ keV energy band, the high resolution ACIS images has uncovered a complex morphology consisting of the knots and filaments of enriched ejecta and shocked ISM, as well as the limb-brightened blast wave around the periphery of the SNR. Imaging in the soft ($0.4-2$ keV) and hard (>2 keV) X-ray bands has revealed the presence of a hard point-like source surrounded by a diffuse nebula that are believed to be a pulsar and its wind nebula. *Chandra* HRC timing-mode observations have been approved for a fast pulsar search to confirm this identification. We also present the *equivalent width* maps for the elemental species O, Ne, Fe, Mg, Si, S, and Ar that have allowed us to identify regions of enhanced metallicity in the remnant. We find that the ejecta knots in G292.0+1.8 are all very in Ne and Mg line emission, with weaker O and Si emission and little Fe. These features can be modeled in terms of pure metal plasmas devoid of H. The brightest emission near the center of the remnant shows solar to sub-solar abundances and temperatures near 0.5 keV, indicating a shocked ISM origin. In sharp contrast with *Chandra* results for Cas A, the only other young Galactic oxygen-rich SNR, we find no evidence for Si- and Fe-rich ejecta in G292.0+1.8.

CATEGORY: SUPERNOVAE, SUPERNOVA REMNANTS AND ISOLATED NEUTRON STARS