A CHANDRA STUDY OF SGR A EAST

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Abstract

We report on the X-ray emission from the shell-like, non-thermal radio source Sgr A East located in the inner few parsecs of the Galaxy based on observations made with the ACIS detector on board the *Chandra X-ray Observatory.* This is the first time Sgr A East has been clearly resolved from other complex structures in the region. The X-ray emitting region is concentrated within the central $\simeq$ 2 pc of the larger radio shell. The spectrum shows strong Kα lines from highly ionized ions of S, Ar, Ca, and Fe. The plasma appears to be rich in heavy elements, over-abundant by roughly a factor of four with respect to solar abundances, and shows a spatial gradient of elemental abundance: the spatial distribution of iron is more compact than that of the lighter elements. The gas mass and elemental abundance of the X-ray emission support the long-standing hypothesis that Sgr A East is a supernova remnant (SNR), The relation between Sgr A East and the supermassive blackhole Sgr A* is discussed.

CATEGORY: SUPERNOVAE, SUPERNOVA REMNANTS AND ISOLATED NEUTRON STARS