Discovery of an X-Ray Pulsar in 3C58

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[Contributed talk, 15min.]

Abstract

Using the High Resolution Camera (HRC) and the Advanced CCD Imaging Spectrometer (ACIS) on the Chandra X-ray Observatory, we observed the SNR 3C58 in order to study the spatial structure of the remnant, search for periodic emission from the central point-like source, and determine the spectrum various components of the remnant. BOth HRC and ACIS images show a point-line central source surrounded by a plerion which is embedded in an extended nebula. In the 30 ksec HRC observation, we detected pulsations with a period of 65.6 msec. With the ACIS 50 ksec observation we measured the variation of the source's power-law spectral index with distance from the central object, and placed limits on the contribution of blackbody emission from the surface of the neutron star. We find no evidence for blackbody emission, and observe a steepening of the synchrotron power-law index with distance from the center. Using RXTE data, and the period found from the HRC, we recover the pulse in the RXTE data and measure the p-dot directly, which agrees well with the value estimated from the Chandra observations.

CATEGORY: SUPERNOVAE, SUPERNOVA REMNANTS AND ISOLATED NEUTRON STARS