Chandra/ACIS Observations of the Rosette Molecular Cloud

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Abstract

The Rosette Nebula, powered by the OB association NGC 2244, is a blister HII region on the edge of a giant molecular cloud at a distance of 1.6 kpc. Massive CO clumps and embedded star clusters seen in the near-IR populate the Rosette Molecular Cloud (RMC). Here we can test whether molecular clumps preferentially forming embedded clusters of low-mass stars make up the fundamental building blocks of star formation in molecular clouds.

We present the first high-spatial-resolution X-ray images of the Rosette Nebula and RMC, obtained in a series of 4 20-ksec snapshots with the Advanced CCD Imaging Spectrometer aboard the Chandra X-ray Observatory in January 2001. These images form a striking 1-degree X-ray panorama of a rich high-mass star formation region. The OB association is resolved at the arcsecond level into $>$250 sources. The other 3 pointings step across the RMC, with $\sim$100 X-ray sources in each field. We will describe the pre-main-sequence population of the RMC revealed by these observations.

Our ongoing efforts to remove the spectral effects of CCD charge transfer inefficiency due to radiation damage will be described in the context of these data.

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