The Chandra LETG and XMM-Newton Spectra of HR 1099

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Abstract

The X-ray luminous RS CVn binary system HR 1099 has been observed on several occasions in the early phases of *Chandra* and *XMM-Newton*. A very hot (up to 30 MK) dominant coronal plasma has been identified from the high-resolution spectroscopic data; cooler plasma is seen down to about 3 MK. We recently obtained 100 ksec in *Chandra*'s Guest Observer Program to study the corona of HR 1099 with the High Resolution Camera (HRC-S) and the Low Energy Transmission Grating Spectrometer (LETGS) across the complete temperature range above 1 MK. The data provide an unprecedented view of spectral lines and continua at high resolution between ~ 1 and 175 Å. We present a joint analysis with *XMM-Newton* data, studying time variability, elemental abundances and their variations along with temperature changes, and electron densities at different temperatures. We put the investigations on HR 1099 into a larger context of a comprehensive study of coronal emission from RS CVn binary systems with *XMM-Newton* and *Chandra* data. We investigate whether there are systematic differences in the emission measure distribution between different objects. We discuss implications from our results for the structure and composition of coronae in active binary systems.

CATEGORY: NORMAL STARS AND WHITE DWARFS