The Origin of Soft X-rays in DQ Herculis

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Abstract

DQ Herculis (=Nova Herculis 1934) is a deeply eclipsing cataclysmic variable containing a magnetic white dwarf primary. The spin of the white dwarf is indirectly detected in the optical as a 71-s oscillation, which is believed to be due to reprocessing of X-ray and EUV radiations from the poles in the accretion disk. The accretion disk is thought to block our line of sight to the white dwarf at all orbital phases. Nevertheless, soft X-rays have been detected from DQ Her with *ROSAT* PSPC (Silber et al 1996), at an inferred (0.1–2.0 keV) luminosity of $\sim 4.5 \times 10^{30}$ $\mathrm{ergs\,s^{-1}}$. Since the white dwarf is excluded as its origin by the viewing geometry, and the luminosity is too high for the secondary, we consider two scenarios. (1) Reprocessing of primary X-rays in an accretion disk wind; and (2) Emission from nova shell, as has been seen for GK Per (=Nova Persei 1901). To choose between these possibilities, we have secured a *Chandra* ACIS-S observation of DQ Her, to be performed in July, 2001, as well as supporting optical observations. We hope to report our preliminary analysis of these observations.

CATEGORY: WHITE DWARF BINARIES AND CATACLYSMIC VARIABLES