

CONSTRAINING THE SHAPE OF THE ACCRETION DISK IN HER X-1: II. EUV OBSERVATIONS

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The bright X-ray binary pulsar Hercules X-1 shows a 35-day cycle in hard x-ray intensity: "Main High state – low state – Short High state – low state". This is caused by a tilted-twisted precessing accretion disk (e.g. see Scott, Leahy, Wilson, 2000, ApJ, 539, 392). What is less well known is that during low states the soft x-rays and extreme ultraviolet radiation are modulated at the orbital period (Leahy, Marshall 1999, ApJ, 521, 328). This radiation is mainly due to reflection off of the companion star HZ Her (Leahy, Marshall, Scott, 2000, ApJ, 542, 446). Here a model of the accretion disk and the companion star is constructed to model the observations of Her X-1 by the Extreme Ultraviolet Explorer (EUVE). The modelling takes into account the constraints on the disk that come from modelling the hard x-ray emission. It is found that there is also an EUV emission component from the accretion disk. The accretion disk shape is well constrained from the shadowing effect on HZ Her.