

Aperiodic optical variability of intermediate polars-cataclysmic variables with truncated accretion disks

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Abstract

We study the power spectra of the variability of seven intermediate polars containing magnetized asynchronous accreting white dwarfs, XSS J00564+4548, IGR J00234+6141, DO Dra, V1223 Sgr, IGR J15094-6649, IGR J16500-3307 and IGR J17195-4100, in the optical band and demonstrate that their variability can be well described by a model based on fluctuations propagating in a truncated accretion disk. The power spectra have breaks at Fourier frequencies, which we associate with the Keplerian frequency of the disk at the boundary of the white dwarfs' magnetospheres. We propose that the properties of the optical power spectra can be used to deduce the geometry of the inner parts of the accretion disk, in particular: 1) truncation radii of the magnetically disrupted accretion disks in intermediate polars, 2) the truncation radii of the accretion disk in quiescent states of dwarf novae. © ESO, 2010.

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Keywords

Accretion, Accretion disks, Binaries: general, Cataclysmic variables, Instabilities, Novae, Stars: variables: general, White dwarfs