Rapid intensity dependent quasiperiodic oscillations in GX:5-1

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reprocessing giving rise to the soft X-ray flux, the sinusoidal hard X-ray component and the iron lines. We suggest that two 'Alfvén belts' consisting of corotating magnetosphere plasma which are located on either side of the accretion disk are the reprocessing regions. The sinusoidal hard X-ray component and the soft component are produced by scattering and absorption/re-emission of the primary X-ray beam impinging on the Alfvén belts. Centrifugally driven outflow of plasma from these regions may play an important rôle in keeping the angular momentum balance of the neutron star and in local heating of the accretion disk in the impact zones. The periodic 35-day obscurations of the X-ray source may be caused by a warping of the accretion disk due to the magnetic torques which are modulated with the neutron star precession period.

The proposed model explains the observed 1·24 s and 35 d variations of the soft and hard X-ray flux as well as of the iron lines in a consistent way and strongly constrains the geometry of the system.

Rapid, Intensity-Dependent Quasi-Periodic Oscillations in GX 5–1

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The medium-energy experiment on *Exosat* has been used by Jansen, van Paradijs, Lewin, van den Heuvel, Trümper, Sztajno and me to study Galactic bulge sources. During a search for millisecond rotation periods in the bright bulge sources, we have detected quasi-periodic oscillations from GX 5–1. The oscillations have periods between 25 and 50 milliseconds, coherence times of 5 to 10 cycles and affect between 4 and 6 per cent of the total source flux (1–18 keV). All properties of the oscillations (and also those of the red noise which is present in the data) are strongly correlated with the source flux: for decreasing flux the oscillation frequency drops, and the oscillations become more coherent, while the red noise spectrum steepens. The strengths of the oscillations and of the red noise show a remarkably similar dependence on source flux.

A possible explanation for these phenomena is given in a model proposed by Alpar and Shaham in which the oscillations are caused by a quasi-periodic modulation of the accretion flow at the beat frequency between the rotation frequency of a magnetized neutron star and the Keplerian frequency of the matter at the Alfvèn radius in the disk. This model was earlier proposed by Warner for the case of dwarf novae, which also show quasi-oscillations in which the much lower frequencies are positively correlated to source flux. If this model is correct, then the surface magnetic field of the neutron star is about 10^{10} Gauss and its rotation period is about 10 milliseconds—values which fit in well with scenarios in which bright bulge sources finally evolve into millisecond radio pulsars. However, the predicted ~10 ms rotation period is not observed, with an upper limit to the pulsed fraction of ~0·3 per cent.

The Discovery of X-ray Bursts from Cir X-1

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A sequence of 8 X-ray bursts was detected during an *Exosat* observation of Circinus X-1, which was in its low state; we identify these bursts with Cir X-1. Therefore, it is highly unlikely that this X-ray source is a black hole as previously