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# Possible influence of neutron star magnetic field on the frequencies of twin-peak quasi-periodic oscillations

Motion of accreted gas approaching a neutron star (NS) in a NS low-mass X-ray binary (LMXB) system is determined by the relativistic scaling of orbital frequencies. The gas radiation dominates the NS LMXBs emissivity and accounts for most of the observed variability. As a likely consequence twin-peak quasi-periodic oscillations (QPOs) are observed in more than a dozen of sources. Motivated by the proportionality between the periods of orbital motion and NS mass we present a straightforward comparison between these sources. We investigate relations between QPO periods and their ratios and identify characteristic time scales of QPOs associated to individual sources. We show that in two millisecond pulsars these timescales are clearly longer than those in other NS LMXBs. We suggest that the origin of this difference relies in a relatively strong magnetic field of the pulsars. Our suggestion agrees with the scenario in which the magnetic field increases the gap between the accretion disc inner edge and the NS surface making the characteristic timescale of the orbital motion longer. Alternatively, based on any QPO model considering only geodesic orbital frequencies, the X-ray pulsars' mass has to be of a factor of 50% higher than a typical mass of other sources.

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