Gabriel Török
Institute of Physics, Silesian University in Opava

High frequency quasi-periodic oscillations in low-mass binary systems with neutron stars

Authors: G. Torok, P. Bakala, E. Sramkova, Z. Stuchlik, M. Urbanec, and K. Goluchova

Twin-peak quasiperiodic oscillations (QPOs) are observed in the X-ray power-density spectra of several accreting low-mass neutron star (NS) binaries. We consider various QPO models (e.g, the relativistic precession - RP model) and estimate the mass of NS in the sources 4U 1636-53 and Circinus X-1. We show that QPO estimates result in specific mass-angular-momentum (M-j) relations rather than single preferred combinations of M and j. We also discuss differences in the chi-square behaviour between high- and low- QPO frequency sources and the requirement of a correction to the QPO models. We demonstrate that the differences in the chi-square behaviour can be related to the variability of the model predictive power across the frequency plane and the same correction can be required for both classes of sources. We show that for a particular toy-modification of the RP model the data of 4U 1636-53 are well matched assuming the angular momentum inferred from the X-ray burst measurements.