Contribution ID: **305** Type: **Talk**

The peculiar X-ray variability of the transitional pulsar IGR J18245-2452

Wednesday, 16 December 2015 17:10 (20 minutes)

The pulsar IGR J18245−2452 was dubbed as transitional, after detection of X-ray accretion induced pulsations, during an outburst which interrupted radio, rotationally-powered emission. The source was observed at the peak of its X-ray flux using XMM-Newton twice for a total exposure of 90 ks. At odds with other accreting millisecond pulsars, its power spectrum is characterised by a strong flicker noise with no measurable low-frequency cutoff and very weak additional band-limited noise (Ferrigno et al., 2014). The count-rate changes by two orders of magnitudes in time intervals as short as a few second, and the spectra are luminosity dependent. Moreover there are episodes of spectral hardening during the lower-flux periods. This might be indicative of the onset of mass ejection from the inner disk boundary with variable intensity, know as weak and strong propeller. Theoretical and numerical modelling of disk-magnetospheric interaction predicts that when this effect takes place, the accretion-induced luminosity might present transient quasi-periodic behaviour due to the accumulation of matter at the magnetospheric boundary and its subsequent accretion.

In this contribution, we present the rich phenomenology of this still unique object and the similarities with other objects of the same class. We will then focus on our search for transient quasi-periodic signals using different techniques such as dynamical power spectra and wavelet analysis. We compare our results with the output of models in which matter is ejected from the disk by the interaction with the neutron star's magnetic field and it is partially recycled at an outer radius. This might induce a variable accretion rate responsible of the strong flares and dips in the light curve with an apparent stochastic behaviour.

Primary author: FERRIGNO, Carlo (University of Geneva)

Co-authors: PAPITTO, Alessandro; REA, Nanda (CSIC)

Presenter: FERRIGNO, Carlo (University of Geneva)

Session Classification: 15 - Binaries