X-RAY ASTRONOMY 2019
Current Challenges and New Frontiers in the Next Decade
8-13 September 2019
CNR/INAF Research Area, Bologna, Italy

Contribution ID: **110** Type: **Poster**

How can a magnet hide its signature line? The case of 4U 1901+03 and 2S 1417-624.

Friday, 13 September 2019 14:58 (2 minutes)

I present results form our analysis of recent outbursts of the Be X-ray binaries 2S 1417-624 and 4U 1901+03. Both sources enter outbursts only very rarely, but their giant outbursts in 2018 afforded us with the chance to study their accretion behaviour in detail using modern X-ray telescopes such as NuSTAR, NICER, Swift, and Chandra.
For 2S 1417-624 we updated the orbital ephemeris and find a possible super-orbital period of 82d. For 4U 1901+03 we refined the position dramatically using Chandra, which allowed for the identification of the optical companion, i.e., the donor star and the clear classification of the source as a Be X-ray binary.
The spectra of both sources could be well described with typical phenomenological models, and we also applied recently developed physical models. These allowed us to constrain the parameters of the accretion column better. However, neither source showed a Cyclotron Resonant Scattering Feature (CRSF), so a direct measurement of the magnetic moment was not possible. However, from the strong pulsations and spectral results, magnetic fields of the order of 10^12G are implied, which often lead to the production of an observable CRSF.
I will put our findings into context with the larger sample of accreting highly magnetised neutron stars, and discuss the lack of a CRSF (despite an implied strong magnetic field) in the context of recent advances in modelling the emission profile of the accretion column.

Topic

Compact and diffuse sources in galaxies and in the Galactic Center

Affiliation

ESA/ESAC

Primary authors: FUERST, Felix (ESA/ESAC); Dr KUEHNEL, Bissinger (ECAP / Uni Erlangen-Nuremberg); HEMPHILL, Paul (Massachusetts Institute of Technology); Dr KRETSCHMAR, Peter (ESA); Dr COLEY, Joel (Howard University); MALACARIA, Christian (NASA-MSFC/USRA); Dr POTTSCHMIDT, Katja (NASA-GSFC / UMBC / CRESST); Prof. WILMS, Joern (Remeis Observatory / ECAP); Dr WOLFF, Mike (NRL)

Presenter: FUERST, Felix (ESA/ESAC)

Session Classification: POSTER SESSION