Contribution ID: **47** Type: **Contributed talk in mini symposium**

Investigating the disc-jet coupling in the NS XRB 4U 1820-30

4U 1820−30 is a persistent ultra-compact X-ray binary (XRB) (orbital period of only 11 mins) harbouring a neutron star (NS) and a highly evolved companion star. Throughout its ~170–180 d super-orbital accretion cycle, the system evolves between phases of high and low X-ray modes, driving dramatic changes in the accretion disk and the jets. In this recently published work (Marino et al., 2023, MNRAS), I will present the results of a dense multi-wavelength observational campaign on the NS XRB 4U 1820−30, including quasi-simultaneous radio (ATCA) and X-ray (NICER, NuSTAR, Swift) observations spanning four months in 2022. Throughout this campaign, we are able to follow how the spectral/timing behaviour of the accretion flow and the jet properties evolve in tandem, something rarely done in NS XRBs. Our results show that the accretion disc properties are stable over the full accretion cycle, while a cyclic evolution of the Comptonisation component seems entirely responsible for the observed X-ray flux modulation. Interestingly, a compact radio jet is detected during the low modes, but is quenched when the X-ray flux increases above a certain threshold. This jet quenching seems to be unrelated to the spectral hardness. Such a trend appears critically different to what typically observed in black hole (BH) XRBs, where jet quenching occurs over spectral state transitions. I will discuss these results in the context of the poorly understood accretion flow / jet correlation in NS XRBs, trying to address how and why such a correlation may differ between NS and BH XRBs.

Primary author: MARINO, Alessio (Insitute of Space Sciences (ICE-CSIC))

Presenter: MARINO, Alessio (Insitute of Space Sciences (ICE-CSIC))

Session Classification: Accretion Processes