

Aging with grace: Studying the chemical composition and evolutionary history of short-period X-ray binaries

Wednesday, 17 May 2023 13:15 (1 minute)

Studying the chemical composition of accretion discs in low-mass X-ray binaries (LMXBs) provides vital information about their formation and evolutionary history. This, in turn, touches on a range of key topics, such as the formation and physics of Type-Ia supernovae, the birth masses and growth of compact objects, and the physics of accretion. Ultraviolet spectroscopy is particularly suited to study the composition of the transferred material in the accretion disc, as this waveband contains strong transitions of important elements, such as C, N, O, and He. However, this area has hardly been explored yet for LMXBs. In this talk, I will present my work on studying the UV spectra of several short-period X-ray binaries. I will present the composition and relative element abundances of the discs, as well as properties of the donor star. Finally, I will discuss our initial conclusions on the current evolutionary stages and histories of these binaries.

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Session Classification: Poster Prizes & closing