Contribution ID: **79** Type: **not specified**

# Sorgenti X binarie di tipo Be: studio degli estremi di accrescimento con il telescopio XMM-Newton

*Tuesday 3 June 2025 18:37 (12 minutes)*

"Be-type X-ray binaries (BeXRBs) are systems composed of a neutron star (NS) orbiting a Be star. In this presentation I will show how, thanks to observations of ESA's *XMM-Newton* telescope, it was possible to study these sources in two cases that are at the opposite ends of the matter accretion: the persistent BeXRBs, with low luminosity and long orbits (Porb > 100 d), and the transient BeXRBs, with periods of a few days, during the outburst phases.
In persistent sources, the emission spectra show a hot thermal component (kT = 1-2 keV) that contributes for 30-40 % of the total flux and has a size consistent with that estimated for the polar cap of the NS. In these sources, the magnetic field of the NS causes the matter transfer from the wind of the companion Be star directly to the polar caps of the NS, at a rate low enough to make them visible.
In transient sources, instead, the spectra show a colder thermal component (kT = 0.1-0.2 keV) but of large dimensions, comparable to the magnetospheric radius; this component is variable along the pulse and contributes only marginally to the total flux. In these cases, the transfer of matter occurs through an accretion disk, truncated at the magnetospheric radius; the accretion rate is so high that it obscures the polar caps, but the primary X-ray emission has a ""fan-beam"" geometry and is reprocessed at the inner edge of the accretion disk, thus generating the observed thermal component."

**Presenter:** LA PALOMBARA, Nicola (Istituto Nazionale di Astrofisica (INAF))

**Session Classification:** L'astrofisica delle alte energie: da Integral a CTAO (chair: P. Ubertini)