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An Accretion-Ejection paradigm for compact objects

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Powerful accretion processes around black holes (BH) in X-ray binaries or AGN give birth to High energy emission from UV to X-rays/gamma-rays. While the BHs strongly differ in terms of mass in these objects, their close environment shows clear similarities with the presence of (1) an optically thick accretion disk, (2) a hot plasma (the so-called corona) producing hard X-rays through comptonisation of the disk photons, and (3) winds and/or powerful jets. We have developed an accretion-ejection model composed of a Jet Emitting Disk (JED), below a transition radius Rj, and a standard accretion disk (SAD) beyond. In JED, jets carry away a large part of the disk angular momentum resulting in higher accretion speed and lower density than in SAD. The radial temperature and optical depth of the JED-SAD are derived by solving for the thermal structure of the accretion flow. The global SEDs are then self-consistently obtained by radial integration. Playing with the accretion rate feeding the system and the transition radius Rj, we can reproduce all the different spectral states of XrBs during their outburst as well as the evolution of the radio emission. This model has been applied with success to the different outbursts of GX 339-4 observed by RXTE/PCA (Marcel et al. 2018a,b, 2019 sub.). We will discuss the implications of these results for GX339-4. We will also present the recent applications to other XrBs (like the outlier H1743-322) and to AGNs.

Topic

Compact and diffuse sources in galaxies and in the Galactic Center

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