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Jets and Luminosity Extremes: Insights from Swift J1727.8-1613's 2023-2024 Outburst

Swift J1727.8-1613 is a recently discovered black hole low-mass X-ray binary (BH LMXB) that began its first recorded outburst in the autumn of 2023. The source rapidly became one of the brightest X-ray sources in the sky —reaching an X-ray flux nearly an order of magnitude greater than that of the Crab Nebula —and prompted a comprehensive multi-wavelength observing campaign. The radio emission from Swift J1727.8-1613 —and thus its relativistic jets —demonstrated a rich phenomenology, including multiple bright (>100 mJy) radio flares, spatially resolved ballistic ejections, and complex polarimetric evolutions.

In this talk, I will present key findings and interpretations from our multi-facility radio monitoring campaign, which tracked the evolution of the jets throughout this explosive outburst. I will also compare our radio (i.e., jet-centric) perspective to results at other wavelengths, particularly focusing on the remarkable X-ray luminosity at the start of the outburst. Perhaps most strikingly, at its current distance estimate, Swift J1727.8-1613 appears to be the brightest BH LMXB ever detected in the hard state, suggesting that it may harbour the most massive black hole yet identified in such a system.

Contribution

Oral talk

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