



Multiwavelength Observations of a Jet Launch in Real Time from the Post-changing-look Active Galaxy 1ES 1927+654

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Abstract

We present results from a high-cadence multiwavelength observational campaign of the enigmatic changing-look active galactic nucleus 1ES 1927+654 from 2022 May to 2024 April, coincident with an unprecedented radio flare (an increase in flux by a factor of ~ 60 over a few months) and the emergence of a spatially resolved jet at 0.1–0.3 pc scales. Companion work has also detected a recurrent quasi-periodic oscillation (QPO) in the 2–10 keV band with an increasing frequency (1–2 mHz) over the same period. During this time, the soft X-rays (0.3–2 keV) monotonically increased by a factor of ~ 8 , while the UV emission remained nearly steady with $<30\%$ variation and the 2–10 keV flux showed variation by a factor $\lesssim 2$. The weak variation of the 2–10 keV X-ray emission and the stability of the UV emission suggest that the magnetic energy density and accretion rate are relatively unchanged and that the jet could be launched owing to a reconfiguration of the magnetic field (toroidal to poloidal) close to the black hole. Advecting poloidal flux onto the event horizon would trigger the Blandford–Znajek mechanism, leading to the onset of the jet. The concurrent softening of the coronal slope (from $\Gamma = 2.70 \pm 0.04$ to $\Gamma = 3.27 \pm 0.04$), the appearance of a QPO, and the low coronal temperature ($kT_e = 8^{+8}_{-3}$ keV) during the radio

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