

The emergence of X-ray emission lines during relativistic radio-jet formation in the changing-Look active galactic nucleus 1ES 1927+654

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ABSTRACT

We present results from a comprehensive multi-wavelength monitoring campaign of the changing-look active galactic nucleus 1ES 1927+654 during the onset and evolution of a radio jet $\sim$ (May 2022–August 2025), using observations from *XMM-Newton*, *Swift*, TNG, ZTF, VLA, and VLBA. The soft X-ray emission lines at ~ 0.56 keV and ~ 1 keV have appeared with variable strength and width during the formation of a nascent jet, with the ~ 1 keV feature persisting since the post-2017 flare phase. We also report the detection of a broad (~ 800 eV) FeK emission feature at $\sim (6 - 7)$ keV in ~ 70 ks of stacked EPIC-pn spectra, marking the first such detection, which historically was lacking in this source. The joint spectral fitting of *XMM-Newton* EPIC-pn and RGS data reveals the presence of ionized absorbers in 2022, followed by the weaker absorption in 2023 to 2025. The emergence of emission features concurrent with the decline of ionized absorption suggests a transition in the inner