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The vanishing of the primary emission region in PKS 1510-089

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PKS 1510-089 is the only known flat spectrum radio quasar with persistent very-high-energy ($E > 100\text{GeV}$) gamma-ray emission. It also showed varying and complex variability and correlation patterns, which were hard to explain within a single-zone emission model. Here, we present recent observations with H.E.S.S., Fermi, Swift, ATOM and SALT. These suggest that PKS 1510-089 used to have at least two active emission regions. On the one hand, the primary emission region was probably located within the broad-line region. On the other hand, the bulk of the VHE emission originated from the second zone located beyond the BLR. These conclusions can be drawn from the apparent vanishing of the primary emission region, which has been revealed by a significant flux drop in the high-energy ($E > 100\text{MeV}$) gamma-ray and optical energy bands. Additionally, SALT observations reveal a disappearance of the polarization, which makes it possible to explain the optical/UV data with emission from the accretion disk and BLR alone.

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