Short review on PKS 2155-304: past observations and prospects

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PKS 2155-304 is a high-frequency peaked BL Lac object (HBL) located at z = 0.116. In 2006, it experienced an extreme very-high-energy (VHE) flare observed by H.E.S.S., which revealed minute-scale variability and posed challenges for standard emission models. Since then, it has become a key target for probing Lorentz Invariance Violation (LIV) and extragalactic background light (EBL) absorption.

The source has been observed in recent years by several VHE instruments, including MAGIC and LST-1, with complementary data available from multiwavelength partners such as Swift, Fermi-LAT, and optical telescopes. These observations include episodes of heightened activity and follow-up monitoring, motivating continued efforts to build a coherent, broadband picture of the source.

In this contribution, we will revise the key features that make PKS 2155-304 interesting for VHE and multiwavelength studies, with emphasis on its relevance for probing extreme variability and testing fundamental physics. We will also comment on recent observational efforts and their potential to advance our understanding of the source's emission processes.

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