

Detection of transient quasi-periodic flux modulation at gamma-rays from blazar PKS 0903-57

Tuesday 11 October 2022 10:31 (1 minute)

We report the detection of a transient quasi-periodic flux modulation in the 6-hour binned γ -ray light curve of blazar PKS 0903-57 observed by Fermi-LAT. Several independent periodicity search analyses revealed a periodicity of ~ 6 days that lasted for 5 full cycles during its outburst in March-April 2020. Using Monte-Carlo light curve simulation technique, we found the QPO detection significance to be 4.7σ . We explored a few physical models responsible for the observed transient QPO, such as a binary black hole system, precession of the jet, a hotspot rotating around the central black hole near the innermost stable circular orbit etc. The flaring episode can be explained as the emergence of a bright plasma blob close to the central engine. The periodic flux variation with a trend of decreasing peak flux can probably be attributed to the helical motion of the blob inside a curved jet.

Track

AGN

Primary authors: Mr ROY, ABHRADEEP (Tata Institute of Fundamental Research, Mumbai, India); Dr SARKAR, Arkadipta (Deutsches Elektronen-Synchrotron, Platanenallee 6, D-15738 Zeuthen, Germany); Dr CHATTERJEE, ANSHU (Tata Institute of Fundamental Research, Mumbai, India); CHITNIS, Varsha (Tata Institute of Fundamental Research, Mumbai, India); Dr GUPTA, Alok (Aryabhata Research Institute of Observational Sciences, Manora Peak, Nainital, India)

Presenter: Mr ROY, ABHRADEEP (Tata Institute of Fundamental Research, Mumbai, India)

Session Classification: Poster session