Title:	X-ray Variability of VHE FSRQs
Authors:	Dathan, Lekshmi
Keywords:	X-ray VHE FSRQs
Issue Date:	May-2023
Publisher:	IISER Mohali
Abstract:	Flat Spectrum Radio Quasars (FSRQs) are a class of Active Galactic Nuclei (AGNs) that come under the category of Blazars along with BL Lacs. They have relativistic jets aligned at very small angles (< 15 0) to the line of sight. Despite being strong gamma-ray emitters in the MeV-GeV range, these are not frequently detected at Very High Energy (VHE, E > 100GeV). Usually, high-frequency peaked BL Lacs are found emitting VHE. Out of a total of 651 FSRQ detected in the Fermi gamma-ray observatory, 9 of them have been found to emit in VHE. The project studied the properties of the 9 FSRQs in the X-ray region. The Blazars have a characteristic double-humped Spectral Energy Distribution (SED), with the first peak (optical/UV) attributed to Synchrotron emission and the second peak (gamma ray) to inverse Compton scattering. In this leptonic scenario, both peaks are correlated. X-ray emission can have contributions from the high-energy tail of the synchrotron peak and thus is related to the VHE emission. X-ray emissions in FSRQs are due to Synchrotron Self Compton (SSC) in general. The temporal and spectral behaviour of the source was studied using the light curves and SEDs during VHE and non-VHE times in the X-ray regime. The data was taken from the XRT Telescope of the Neils Geherel Swift Observatory. HEASoft version 6.30.1 package was used for the analysis. The light curve showed variability, and VHE emissions were found at both low and high flux states. The SEDs were fitted to the power law model. It showed a rising trend for all sources except for PKS 1441+25, which showed completely opposite behaviour plausibly due to more synchrotron components. The SED showed a similar trend during VHE and non-VHE times. There was no peculiarity for the 9 sources during VHE emissions in terms of temporal flux variability, flux states, spectral index, and spectral shape compared to these behaviour during non-VHE times, indicating the VHE to be likely due to the high brightness of the source.
Description:	embargo period
URI:	http://hdl.handle.net/123456789/5395
Appears in Collections:	MS-18

Files in This Item:

File	Description	Size	Format	
embargo period.pdf	embargo period	6.04 kB	Adobe PDF	View/Open

Show full item record