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TIMING AND SPECTRAL ANALYSIS OF BLAZAR OJ 287: INVESTIGATING ITS POTENTIAL AS A HIGH-ENERGY NEUTRINO SOURCE

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Abstract: We conducted a study on temporal and spectral analysis of observational data from OJ 287, which was observed from April 2005 to April 2020. We used a Chi-square minimization technique for spectral analysis. Among all observations most intense flaring was observed in April 2020 and flaring was observed in soft sub-bands 0.3-2 keV. The detected flaring was dominated by the thermal process. The best fit model was (log-parabola+blackbody). Both synchrotron and inverse Compton mechanisms contribute to the generation of X-ray emissions. The observations interpreted as being driven by the inverse Compton emission mechanism typically exhibit a lower energy flux in soft sub-bands and a higher energy flux in hard sub-bands. Both the May 2015 and April 2020 observations exhibit a pattern where their energy flux values are higher in soft sub-bands and lower in hard sub-bands. This pattern indicates that in these two observations, the emission is likely influenced by the synchrotron emission mechanism. The observation of synchrotron and inverse Compton emission mechanisms suggests that the astrophysical processes occurring within the source OJ 287 involve internal shocks and give rise to gamma-ray bursts There is no possibility of emission of high energy neutrinos from OJ 287 because flaring takes place due to thermal process in soft sub-bands.

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