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Understanding the astrophysical jets in active galaxies

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Abstract

Astrophysical jets exhibit strong emissions throughout the electromagnetic spectrum. Most prominent sources of jets are Active Galactic Nuclei (AGN). They consist of ultra-relativistic particles and can extend upto large distances ($\sim$Mpc). In order to understand the observed properties of the jet, it is necessary to construct an emission model which can be used to understand the variations in observed multi-frequency fluxes. Fitting the model against the observations can help us determine the possible role of jet parameters on the observed variations. We constructed a static emissivity model which includes synchrotron and SSC emission processes. We used our model to understand the effect of the variation of different jet parameters on the observed emission. Further, we utilize our model to explain the observed optical flux variation of the blazar, PKS 2155-304. Any systematic study of selected blazars utilizing this emission model coupled with good quality of observation will be extremely useful in better understanding of jet physics.