

Stochastic Particle Acceleration and Photon Emission in Blazars

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Abstract content

Multi-wavelength observations of blazars have revealed curved feature in photon spectrum. Moreover, in some cases, the required electron spectral index at injection becomes harder than 2. In order to reproduce such a curved electron spectrum, we discuss the second order Fermi acceleration by turbulence in the jet. Here, we focus on the time-dependent effects of the electron acceleration and injection. We numerically follow the temporal evolution of the electron spectrum in the jet. We show that the resultant photon spectra well agree with the various observed spectra of 1ES 1101, Mrk 421, and 3C 279. Especially, the light curve and spectrum of the recent intensive flare in 3C 279 are both reproduced by our simple model. Therefore, this stochastic acceleration model can be a reasonable explanation for the electron acceleration in blazars.

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