

Physics of Relativistic Jets in Blazars

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Gamma-ray emission from blazars provides us important diagnostics on the size and beaming factor of the emitting region as well as the energy densities of magnetic field, relativistic electrons and various radiation components. Observations suggest that relativistic jets are kinetic power dominated and are composed mainly of electron-positron pairs. I show that particle acceleration in shock waves conforms very well with observations. I also propose a scenario of the formation and bulk acceleration of such jets with particle acceleration by shocks and discuss various theoretical problems with this scenario such as pair annihilation and radiation drag.