Shock Acceleration in Blazar Jets

Mastichiadis,A. and Kirk, J.G.
Max-Planck-Institut fuer Kernphysik, D-69029 Heidelberg, Germany

Abstract

The recent multiwavelength observations of Active Galactic Nuclei have revealed many interesting patterns in the emission of these objects across the EM spectrum. In the present we examine the flaring behaviour of the TeV blazars by adopting a simple shock-in-jet model. The electrons are accelerated in an advancing shock by a first-order Fermi scheme and cool by synchrotron and inverse Compton radiation. We show that the characteristic features of the flares (rise and fall timescale, spectral slope, as well as soft/hard lags) depend sensitively on the interplay between the acceleration and loss timescales. We present examples of different types of flares and discuss various observational tests that could, in principle, strengthen our shock acceleration hypothesis.