Contribution ID: **42** Type: **not specified**

Numerical models of synchrotron emission from AGN jets: the role of the host environment.

Thursday, 7 October 2021 17:40 (20 minutes)

Synchrotron emission (SE) is one of the most important diagnostic tools of the physical state of AGNs relativistic jets, mostly because of its ubiquitous presence. However, modelling SE from jets is not free of ambiguities: different models often can provide equally good spectral fits in the observed ranges. In this work we start from a series of high-resolution AMR numerical models of radiolobes, varying the inclination of successive jet generations according to different prescriptions (from always straight, to limited within a cone, to completely random), to derive synchrotron spectra and images at different radio frequencies and study how the disentanglement of different features depends on the distance (redshift) and intrinsic evolution of the sources themselves. We restrict ourselves to blazar-like sources (l.o.s. of the jets within 6 degrees), and focus on the role of the host ICM/IGM thermodynamic state in shaping the properties of the observed SE. We demonstrate that on average jets propagating in an equilibrium medium (e.g. 1-st generation jets) have distinct observational signatures from 2-nd and 3rd generation jets, and similar differences are noticed in the relationship between SE and gamma-ray emission.

Reasearch area

Extragalactic Continuum (galaxies/AGN, galaxy clusters)

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Session Classification: Galaxy Evolution and AGN