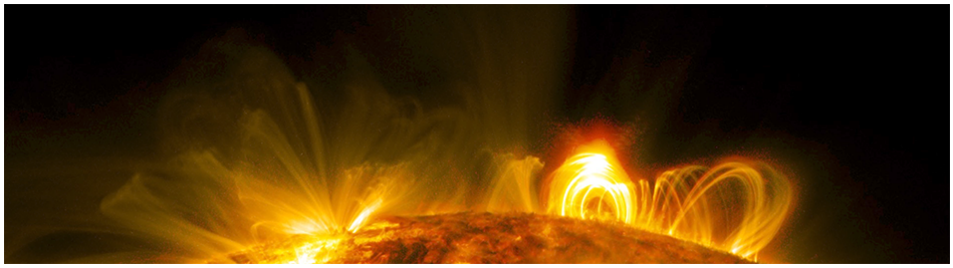

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Radiative turbulence in magnetically-dominated jets

Thursday, 18 November 2021 09:45 (1 hour)

Relativistic jets from Active Galactic Nuclei (AGN) are likely magnetically-dominated, i.e. the magnetic energy per particle exceeds the rest mass. Since there is a huge separation of scales between the transverse size of the jet and the Larmor radius of the particles that emit the observed radiation, the dissipation of the magnetic energy is mediated by a turbulent cascade.The advent of large-scale Particle-In-Cell simulations makes it possible to study turbulent energy dissipation in magnetically-dominated plasmas from first principles. I will show that turbulence is able to accelerate non-thermal particles, even when the radiative losses are severe. The accelerated particles are strongly anisotropic, and move nearly in the same direction of the local magnetic field. As an effect of the anisotropy, the synchrotron emission is severely suppressed with respect to the standard case of isotropic particles. I will discuss the implications of the particle anisotropy for the modelling of non-thermal radiation from AGN jets.

Primary author: SOBACCHI, Emanuele (Columbia University)

Presenter: SOBACCHI, Emanuele (Columbia University)

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