



1-2 March 2023
INAF/IRA Bologna

Contribution ID: 3

Type: **not specified**

Paola Rossi: Simulations of jets: results and perspectives

Wednesday, 1 March 2023 14:50 (20 minutes)

Relativistic magnetohydrodynamical numerical simulations represent a fundamental tool for studying the dynamics of jets from their acceleration region, to the propagation and termination. We will discuss the main results for the different jet regions. We will illustrate the possible deceleration process from relativistic to subrelativistic velocities occurring in the inner region of low power radio jets. We will further discuss the following propagation on the kpc scale, emphasizing the role of magnetic field in determining the jet morphological properties.

One limitation of numerical simulations is that they cannot predict in a consistent way the jet non-thermal emission properties. Here we will discuss the results of an hybrid approach that tries to overcome this limitation. In this approach, we follow, along with dynamics of the thermal fluid, the evolution of the distribution function of a non-thermal relativistic particle population, by using a sub-grid approach for treating acceleration processes occurring in dissipative regions such as, for example, shocks. We will illustrate the potentialities of this approach with several examples.