Simulations of Relativistic Outflows in Astrophysics with Ratpenat

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Ratpenat is a 3D-Relativistic Hydrodynamics code that allows us to study relativistic flows in astrophysical scenarios. Our project includes the study of the evolution of micro quasar and extragalactic outflows. In particular, we study, on the one hand, the interaction of the jets in micro quasars with a stellar wind from a companion massive star during its first minutes of evolution, in three dimensions. From this work we pretend to get information about the jet initial power required to escape the binary star region and about the possible locations of high-energy emission in such systems. On the other hand, we simulate the long term evolution of jets (in axisymmetric two-dimensional coordinates) in galactic environments in order to study the influence of the jet and medium composition and properties in the evolution of these objects. In this talk, I will review the last results of this ongoing work.