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Numerical simulations of jet- interstellar medium interactions

Sabina Ustamujic[1], Ana Inés Gómez de Castro[2], and Javier López-Santiago[3]

[1] S. D. Astronomía y Geodesia, Facultad de Ciencias Matemáticas, Universidad Complutense de Madrid, 28040 Madrid, Spain
[2] S. D. Astronomía y Geodesia, Facultad de Ciencias Matemáticas, Universidad Complutense de Madrid, 28040 Madrid, Spain
[3] S. D. Astronomía y Geodesia, Facultad de Ciencias Matemáticas, Universidad Complutense de Madrid, 28040 Madrid, Spain

Abstract

The physical system formed by a very young star and its accretion disc is a scaled version of the compact object+accretion disc scenario observed in AGNs. For young stars with accretion discs (e.g. classical T Tauri stars), dense gas coming from the disc is collimated into a jet as explained in the context of the theory of magneto-centrifugal launching. We aim at studying the jet propagation and its interaction with the ambient medium. In particular, we are interested in determining the properties of the jet material in terms of density and temperature. Our objective is to understand the morphology of the jet at different wavelengths and the appearance of distinct structures such as blobs and Herbig-Haro objects and their relation with initial conditions. We performed a set of numerical model simulations of supersonic jet ramming into uniform ambient medium using the PLUTO code.