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Numerical simulation of high Mach number astrophysical jets with radiative cooling. (English) [Zbl 1076.76055](#)

J. Sci. Comput. 24, No. 1, 29-44 (2005).

Summary: Computational fluid dynamics simulations using the WENO-LF method are applied to high Mach number nonrelativistic astrophysical jets, including the effects of radiative cooling. Our numerical methods have allowed us to simulate astrophysical jets at much higher Mach numbers than have been attained (Mach 20) in the literature. Our simulations of the HH 1-2 astrophysical jets are at Mach 80. Simulations at high Mach numbers and with radiative cooling are essential for achieving detailed agreement with the astrophysical images.

MSC:

76M20 Finite difference methods applied to problems in fluid mechanics

76N15 Gas dynamics (general theory)

85A30 Hydrodynamic and hydromagnetic problems in astronomy and astrophysics

Cited in **1** Review
Cited in **9** Documents

Keywords:

WENO-LF method; HH 1-2 jets

Software:

CLAWPACK

Full Text: [DOI](#)

References:

- [1] Shu C.-W. (1999). High order ENO and WENO schemes for computational fluid dynamics, in *High-Order Methods for Computational Physics Lecture Notes in Computational Science and Engineering* vol. 9, Springer Verlag, New York pp. 439–582 · [Zbl 0937.76044](#)
- [2] <http://www.amath.washington.edu/law/>. R. J. LeVeque's CLAWPACK website

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