

**Del Pino, Stéphane**

**A curvilinear finite-volume method to solve compressible gas dynamics in semi-Lagrangian coordinates.** (English. Abridged French version) [Zbl 1426.76652](#)  
C. R., Math., Acad. Sci. Paris 348, No. 17-18, 1027-1032 (2010).

Summary: We present a new finite-volume method to solve compressible gas dynamics in semi-Lagrangian coordinates on curvilinear grids. The approach relies on a weak formulation to compute the mesh velocity using an acoustic Riemann solver approximation. We prove this method to be both conservative and entropic.

**MSC:**

**76N15** Gas dynamics (general theory)

**76M12** Finite volume methods applied to problems in fluid mechanics

Cited in **1** Review  
Cited in **10** Documents

**Full Text:** [DOI](#)

### References:

- [1] Carré, G.; Del Pino, S.; Després, B.; Labourasse, E., A cell-centered Lagrangian hydrodynamics scheme in arbitrary dimension, *J. comput. phys.*, 228, 14, 5160-5183, (2009) · [Zbl 1168.76029](#)
- [2] Carré, G.; Del Pino, S.; Pichon Gostaf, K.; Labourasse, E.; Shapeev, A.V., Polynomial least-square reconstruction for semi-Lagrangian cell-centered hydrodynamic schemes, *ESAIM: proc.*, 28, 100-116, (2009) · [Zbl 1176.76078](#)
- [3] Cheng, J.; Shu, C.-W., A third order conservative Lagrangian type scheme on curvilinear meshes for the compressible Euler equations, *Commun. comput. phys.*, 4, 5, 1008-1024, (2008) · [Zbl 1364.76111](#)
- [4] Després, B.; Mazeran, C., Lagrangian gas dynamics in two dimensions and Lagrangian systems, *Arch. ration. mech. anal.*, 178, 327-372, (2005) · [Zbl 1096.76046](#)
- [5] V. Dobrev, T. Ellis, T. Kolev, R. Rieben, Energy conserving finite element discretizations of Lagrangian hydrodynamics. Part 1: Theoretical framework, Downloadable presentation of Multimat'09 conference.
- [6] Maire, P.-H.; Abgrall, R.; Breil, J.; Ovardia, J., A cell-centered Lagrangian scheme for two-dimensional compressible flow problems, *SIAM J. sci. comput.*, 29, 4, 1781-1824, (2007) · [Zbl 1251.76028](#)

This reference list is based on information provided by the publisher or from digital mathematics libraries. Its items are heuristically matched to zbMATH identifiers and may contain data conversion errors. It attempts to reflect the references listed in the original paper as accurately as possible without claiming the completeness or perfect precision of the matching.