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A cell-centered Lagrangian method based on local evolution Galerkin scheme for two-dimensional compressible flows. LI TANG, YU-TAO SUN, Institute of applied physics and computational mathematics — The paper presents a new cell-centered Lagrangian method for two-dimensional compressible flows. The main feature of the method is that the velocity and pressure at the cell vertex are computed using the local Galerkin evolution scheme for solving the linearized flow equations in terms of the bicharacteristic theory, and then the velocity and pressure are used to update the grid coordinates and evaluate the numerical flux across the cell interface. The local Galerkin evolution operator in terms of the Lagrangian description is developed, which gives the solutions evolving for an infinite small time interval from the initial conditions and still maintaining the genuine multidimensional nature of hyperbolic system. Mean- while, the present method can preserve geometry compatibility. Several numerical results demonstrate that the method possesses of good property of convergence, symmetry and robustness, and has the ca pability to handle the multimaterial flows.

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