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Jean-Luc Guermond* (guermond@math.tamu.edu), Texas A&M University, College Station, TX 77843, and **Bojan popov** and **Ignacio Tomas**. *Invariant domain preserving discretization-independent schemes and convex limiting for hyperbolic systems.*

We introduce an approximation technique for nonlinear hyperbolic systems with sources that is invariant domain preserving. The method is discretization-independent provided elementary symmetry and skew-symmetry (generic) properties are satisfied by the discretization. The method consists of blending a low-order method and a high-order method. The low-order method is formally first-order accurate in space and invariant domain preserving. The high-order method may violate the invariant domain properties, but this defect is corrected a posteriori by a limiting technique that we call convex limiting. After limiting, the resulting methods satisfy all the invariant domain properties that are imposed by the user and is formally high-order accurate. The two key novelties are that (i) limiting is done by enforcing bounds on quasiconcave functionals; (ii) the bounds that are enforced on the solution at each time step are necessarily satisfied by the low-order approximation. (Received January 02, 2019)