Positivity-preserving and entropy-bounded Discontinuous Galkerin method for conservation laws YU LV[1], MATTHIAS IHME, Stanford University — Although Discontinuous Galerkin (DG) methods have gained considerable success for application to advection-dominated flows, the robustness and the treatment of geometric singularities and flow-field discontinuities remain open problems. In this talk, a DG-method is formulated that is positivity-preserving and entropy-bounded to guarantee algorithmic stability and conservation. After demonstrating the efficacy in one- and two-dimensional tests, this formulation is generalized to unstructured and curvilinear meshes. Details on the algorithmic implementation are presented, and applications to complex geometries in three dimensions are discussed.

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