

Entropy stability and high-order approximation of the compressible Euler equations.

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This talk will discuss questions regarding parabolic regularization of the Euler equations and entropy stability. A sub-class of parabolic regularizations is identified that yields a minimum entropy principle and various entropy inequalities independently of the equation of state, provided a convex entropy exists. It is shown in particular that the Navier-Stokes regularization is not an appropriate regularization of the Euler equations. The consequences of this property will be illustrated numerically using continuous Lagrange elements and a Galerkin technique that does not use any slope limiter.