

Physically-Based Regularizations of the Euler System

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Abstract: Classically the incompressible Navier-Stokes systems is viewed as the natural regularization of the incompressible Euler systems. However, this view is not all that physics allows. An Euler system can be viewed as a member of a hierarchical collection of fluid dynamical systems, each of which might provide regularization mechanisms. This collection will be examined in the context of dilute gases described by a Boltzmann equation. A new dispersive-dissipative system will be derived and its potential regularization mechanisms will be discussed.