

VARIATIONAL PRINCIPLES FOR NONBAROTROPIC FLUID DYNAMICS

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We describe the non-barotropic variational principle in both Lagrangian and Eulerian forms. Thus, we must consider a non-barotropic equation of state in which the internal energy is a function of both density and specific entropy. This implies an extension of our previous work on barotropic flows to the more general non barotropic flows case and may serve in the future for the study of the implications of variational analysis on the redefinition of conserved quantities of topological significance such as circulation and helicity.

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