

Nobody is perfect: Problems with models of perfect fluids

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Abstract

We review some recent results on the Euler system describing the motion of a perfect (meaning inviscid) compressible fluid. The main topics include:

1. Existence and density of “wild” initial data giving rise to infinitely many solutions
2. Solutions with anomalous (discontinuous) energy profile
3. Violating of determinism in the class of weak solutions
4. Possibilities how to restore order in chaos.