

Energy dissipation and shocks in ideal fluid systems

Marco Inversi (MPI, Leipzig)

In an ideal density dependent fluid system, is the total energy dissipated on shock type discontinuities? To this end, we study the local energy balance for weak solutions to the isentropic compressible Euler system and derive fine properties of the defect measure, that describes the (possible) loss of the total energy. This is done by a careful analysis of the small scale properties of the solutions at the shock discontinuity. By means of the same technique, we also consider the inhomogeneous incompressible case, and, comparing the result, we confirm the general principle that the accumulation of the total energy on codimension one singular structures is a feature that distinguishes compressible and incompressible models.