Title: Lagrangian coordinates for the mass points of planar Burgers equation.

Author: Maxim Arnold

Affiliation: Russian Academy of Science, Russia

Abstract: The solution of d-dimensional Burgers equation with generic initial data develops a finite-time singularity. However it is possible to define a generalized solution below that critical time and define the velocity field inside the instant shock formed by a singularity. Set of all instant shocks in the d + 1 dimensional extended phase space is called world shock. Generalized solution of Burgers equation defines a flow on the world shock. We geometrically characterize the pre-images of the points inside the world shock for the planar Burgers equation and present a classification of mass distribution under possible bifurcations of the instant shocks.