Macroscopic non-uniqueness at the limit of well-posed Hamiltonian dynamics

Jianfei Xue
University of Missouri
jx6v4@mail.missouri.edu

Abstract

We shall examine hydrodynamic equations as limits of rescaled Hamiltonian systems for interacting molecules, as the number of molecules becomes infinite. We shall use this approach to examine the non-uniqueness of hydrodynamic equations. In particular, we shall obtain this way measure solutions of the compressible Euler system without pressure in dimension 2 with spontaneous velocity generation, as well as distinct solutions of non-increasing energy that coincide up to a certain point in time.