Variational methods for hyperbolic balance laws

Michael Westdickenberg
RWTH Aachen University
mwest@instmath.rwth-aachen.de

It is by now well-known that certain parabolic partial differential equations can be understood as generalized gradient flows on suitable metric spaces, such as the space of probability measures equipped with the Wasserstein distance. In this course, I will discuss possibilities to use similar constructions in the context of hyperbolic balance laws, which are not gradient flows, but nevertheless exhibit dissipation phenomena due to the non-smoothness of their solutions. I will focus on models from compressible fluid dynamics, namely the pressureless gas dynamics and the compressible Euler equations.