VLADISLAV PANFEROV, McMaster University
Global regularity of one-dimensional solutions of the Boltzmann equation

For the Boltzmann equation the setting of a narrow shock tube implies that solutions depend only on one spatial coordinate, while having a three-dimensional velocity dependence. We study the propagation of some regularity estimates, such as sup-norms of the macroscopic density, for the corresponding solutions of the Boltzmann equation. Using the methods based on the relative entropy control and on a certain nonlinear functional introduced by Bony and Cercignani, we establish the global in time existence of regular solutions for some model cases of particle interactions.

Joint work with A. Biryuk and W. Craig.