Karlstad Applied Analysis Seminar (2020)

Alexander Bobylev, Keldysh Institute of Applied Mathematics

January 15, Wednesday 13:15

On self-similar solutions of the Boltzmann equation

Abstract

We consider the nonlinear Boltzmann equation and discuss various classes of its self-similar solutions. Some of them were investigated in joint works of the author with Carlo Cercignani (and also with Irene Gamba) in 2000s. This work can be considered as a development of some ideas of that time. In particular, we consider the class of so-called homoenergetic flows and their generalizations. For the case of pseudo-Maxwell molecules we give a constructive proof of existence and uniqueness of self-similar solutions and show that these solutions are attractors for certain classes of initial conditions. This is a joint work with Alessia Nota and Juan Velazquez from Bonn University.