

Smoothing effect for the homogeneous Boltzmann Equation

Tong Yang, City University of Hong Kong

Abstract:

In this talk, we will present our recent works about the smoothing effect on weak solutions to the homogeneous Boltzmann equation without angular cutoff.

Firstly, in a joint work with Alexandre-Morimoto-Ukai-Xu, we show that every L^1 weak solution with finite moments of all order acquires C^∞ regularity in any positive time. And then in a joint work with Morimoto, we show that Villani conjecture holds for the Maxwellian molecule type cross section. That is, any weak solution with measure initial datum except a single Dirac mass acquires C^∞ regularity in any positive time. Here, the coercivity estimate plays an important role. In particular, to prove Villani conjecture, a new time degenerate coercivity estimate is given.

The research was supported in part by the General Research Fund of Hong Kong, CityU # 104511.