

Well-posedness and scattering for the Boltzmann equations: Soft potential with cut-off

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Abstract

In this talk, we report the result on the global existence of the unique mild solution for the Cauchy problem of the cut-off Boltzmann equation for soft potential model $\gamma = 2 - N$ with initial data small in $L_{x,v}^N$ where $N = 2, 3$ is the dimension. The proof relies on the existing inhomogeneous Strichartz estimates for the kinetic equation by Ovcharov (2011) and convolution-like estimates for the gain term of the Boltzmann collision operator by Alonso, Carneiro and Gamba(2010). The global dynamics of the solution is also characterized by showing that the small global solution scatters with respect to the kinetic transport operator in $L_{x,v}^N$. Also the connection between function spaces and cut-off soft potential model $-N < \gamma < 2 - N$ is characterized in the local well-posedness result for the Cauchy problem with large initial data. This is a joint work with Lingbing He.