

colloquium

Wave structures of the linearized Boltzmann equation in a periodic box

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地 點：應用數學系多媒體教室（理 408 室）

摘 要：

We study the wave structures of the linearized Boltzmann equation in a periodic box for non-smooth initial perturbations. The result reveals both the fluid and kinetic aspects of this model. The fluid-like waves are constructed as part of the long-wave expansion in the spectrum of the Fourier modes for the space variable, and the time decay rate of the fluid-like waves depends on the size of the domain.

We design a Picard-type iteration for constructing the increasingly regular kinetic-like waves, which are carried by the transport equations and have exponential time decay rate. The Mixture Lemma plays an important role in constructing the kinetic-like waves, and we supply a new proof of this lemma without using the explicit solution of the damped transport equations.