北京理工大學

数学与统计学院学术报告

Derivation of the compressible Euler equations from the dynamics of interacting Bose gas in the hard-core limit

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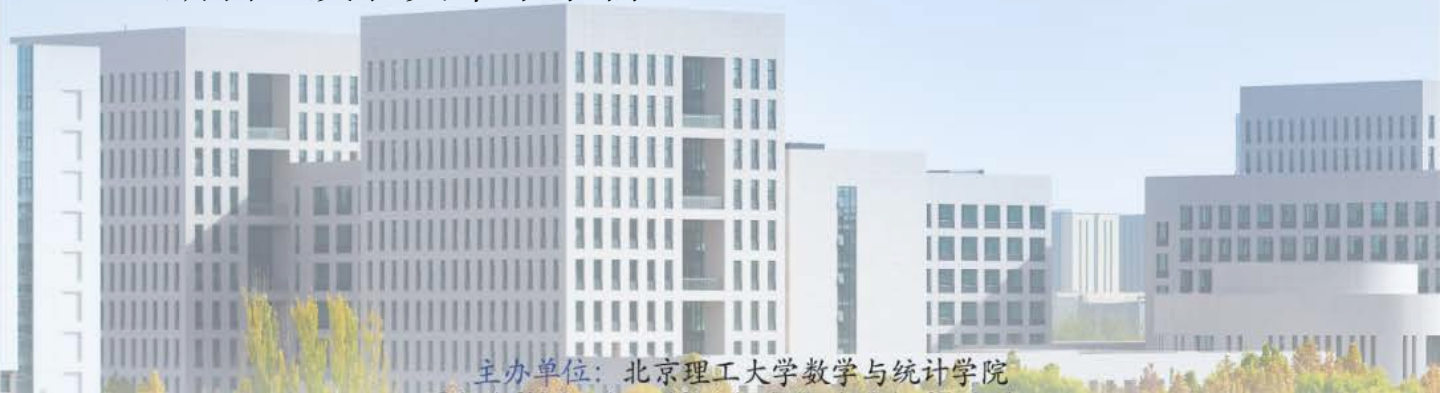
地点：文萃楼E 409

摘要： We examine the dynamics of short-range interacting Bose gases with varying diluteness and interaction strength. Using a combination of mean-eld and semiclassical methods, we show that, for large numbers of particles, the system's local mass, momentum, and energy densities can be approximated by solutions to the compressible Euler system (with pressure P = g2) up to a blow-up time. In the hard-core limit, two key results are presented: the internal energy is derived solely from the many-body kinetic energy, and the coupling constant g =4c0 where c0 the electrostatic capacity of the interaction potential. Additionally, beyond the Gross-Pitaevskii regime, the limiting behavior is described by an eikonal system, supporting the geometric optics approximation for ultracold Bose gases. This is joint work with Shunlin Shen and Zhifei Zhang.

报告人简介： Jacky Chong，北京大学讲师，长期研究数学物理领域，在JEMS,CPDE,PMJ,庞加莱等国际权威学术期刊上发表文章十余篇。



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