Global solutions of isentropic compressible Navier-Stokes with large velocity on low frequency part

Ting Zhang

School of Mathematical Sciences, Zhejiang University, Hangzhou 310027, China

Email address: zhangting79@zju.edu.cn

Abstract

Abstract: In this talk, we consider the Cauchy problem of the N-dimensional isentropic compressible Navier-Stokes with $N \geq 2$. It is shown that, in the low frequency part, this system possesses some dispersive properties derived from the one parameter group $e^{\pm it\Lambda}$. Based on this dispersive effect, we construct global solutions with large initial velocity concentrating on the low frequency part. Such kind of solution has never been seen before in the literature even for the classical incompressible Navier-Stokes equations. The proof relies heavily on the dispersive estimates for the system of acoustics, and a careful study of the nonlinear terms. (Joint works with Daoyuan Fang and Ruizhao Zi)