
**One-dimensional Compressible Navier-Stokes Equations:
The Case When the Far Fields of the Initial Density Are
in Vacuum**

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This paper is concerned with the Cauchy problem of the one-dimensional compressible Navier-Stokes equations for the case when the far fields of the initial density are in vacuum. Under certain assumptions imposed on the initial data, we show that the corresponding Cauchy problem admits a global smooth solution and some uniqueness results are also obtained. This work is joint with Professor Zhouping Xin.