

Non-relativistic limit of the Euler-HMP_N approximation model arising in radiation hydrodynamics

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April 26, 2022

Abstract

In this paper, we are concerned with the non-relativistic limit of a class of computable approximation models for radiation hydrodynamics. The models consist of the compressible Euler equations coupled with moment closure approximations to the radiative transfer equation. They are first-order partial differential equations with source terms. As hyperbolic relaxation systems, they are showed to satisfy the structural stability condition proposed by W.-A. Yong (1999). Base on this, we verify the non-relativistic limit by combining an energy method with a formal asymptotic analysis.

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