

Zero dissipation limit to rarefaction wave with vacuum for the micropolar compressible flow with temperature-dependent transport coefficients

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Abstract

In this article, we consider the zero dissipation limit of the micropolar equations with temperature-dependent viscosity and heat-conduction coefficient. If the given rarefaction wave to the corresponding conservation systems connects to vacuum at one side, we can construct a sequence of solutions to the micropolar equations which converge to the given rarefaction wave with vacuum as the transport coefficients tend to zero. And the uniform convergence rate can be obtained. The key point in our analysis is how to control the degeneracies of the density, the temperature and the temperature-dependent viscosities at the vacuum region in the zero dissipation limit process.

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