

# On the problem of singular limit of the Navier - Stokes- Fourier system coupled with radiation or with electromagnetic field

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We consider relativistic and "semi-relativistic" models of radiative viscous compressible Navier-Stokes-Fourier system coupled to the radiative transfer equation extending the classical model introduced in [1] and we study some of its singular limits (low Mach and diffusion) in the case of well-prepared initial data and Dirichlet boundary condition for the velocity field. In the low Mach number case we prove the convergence toward the incompressible Navier - Stokes - Fourier system coupled to a system of two stationary transport equations, see [2]. In the diffusion case we prove the convergence toward the compressible Navier - Stokes - Fourier system with modified state functions (equilibrium case) or toward the compressible Navier - Stokes - Fourier system coupled to a diffusion equation (non equilibrium case), see [3], [4]. Moreover, the coupling with magnetic field and singular limit will be described, see [5].

## REFERENCES

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