

Singular limit for a system without relative entropy

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Abstract

I will discuss the low Mach and low Froude numbers limit for the compressible Navier-Stokes equations with degenerate, density-dependent, viscosity coefficient, in the strong stratification regime. The talk is based on a joint paper with Francesco Fanelli from Univ. Lyon. Our main result is the proof of convergence to the generalised anelastic approximation, which is used extensively to model atmospheric flows. We considered the case of a general pressure law with singular component close to vacuum, general ill-prepared initial data, and periodic boundary conditions.