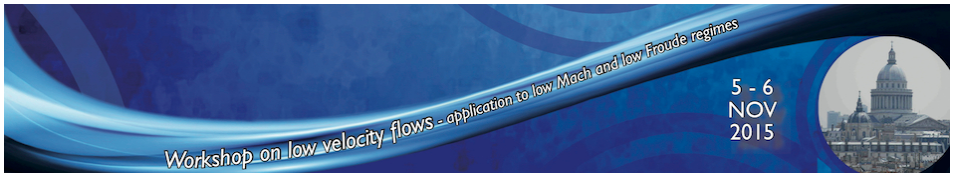

ID de Contribution: **7** Type: **Non spécifié**

Low Mach Number Modeling of Stratified Astrophysical Flows

vendredi 6 novembre 2015 14:00 (45 minutes)

Computational astrophysics has traditionally relied on discretizations of either the fully compressible equations for fluid dynamics, or the anelastic approximation, supplemented by equations describing the thermonuclear reactions and heat release. The low Mach number formulation, like the anelastic approximation, analytically removes acoustic wave propagation from the system. However, the more general low Mach number approach retains nonlinear compressibility effects resulting from nuclear burning, compositional changes and changing radial stratification. This model is a generalization of the pseudo-incompressible approximation to systems with a non-ideal gas equation of state and a time-varying base state. I will discuss the derivation of the low Mach number equation set for astrophysics, focusing on the similarities with and differences from numerical models of the Earth's atmosphere.

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