

Low Mach number flows : Theory and numerical problems

Hervé GUILLARD,

INRIA, 2004 route des Lucioles – 06902 SOPHIA ANTIPOLIS Cedex
herve.guillard@inria.fr

The computations of compressible flows in the near incompressible regime is difficult and the very efficient methods developed for years for the computations of transonic or supersonic flows show poor performances and even wrong behaviour in the low Mach number regime. The purpose of this talk is to review the mathematical theory of the passage from compressible to incompressible and to show that the understanding of this theory allows to explain why the methods developed for compressible flows behave so poorly when the Mach number goes to zero as well to propose tools for correcting them.