

UNIVERSITY OF CRETE  
DEPARTMENTS OF MATHEMATICS AND APPLIED MATHEMATICS

PARTIAL DIFFERENTIAL EQUATIONS SEMINAR

11:15am, Thursday, 10 October 2019  
Room A-303

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*Homogenization of the compressible Navier-Stokes equations with rapidly oscillating densities*

The talk is devoted to recent progress in homogenization theory for the Navier–Stokes equations of compressible gas provided with rapidly oscillating initial distributions of density. The two cases of motion are discussed. Firstly, the results for the classical three-dimensional isentropic NavierStokes equations are observed. Secondly, we discuss the model of one-dimensional anisotropic flow of real viscous gas represented in terms of mass Lagrangian coordinates. In the both cases, the homogenized effective models are derived as the frequency of oscillations tends to infinity. To this end, an additional equation called "kinetic equation" is constructed in order to track evolution of oscillations.

These results (2011–2016) are due to the speaker, Prof. P. Plotnikov (Lavrentiev Institute of Hydrodynamics, Russia) and Prof. J. Sokolowski (Universite Henri Poincare, Nancy, France).