UNIVERSITÀ DI PARMA

DIPARTIMENTO DI SCIENZE MATEMATICHE, FISICHE E INFORMATICHE

http://smfi.unipr.it

Seminari di Fisica Matematica

Prof. **Niclas Bernhoff** (Karlstad University)

Lunedì 6 ottobre 2025 ore **15:00**

Aula F, Plesso di Matematica

Half-space problems for the Boltzmann equation for polyatomic gases and entropy inequalities

Abstract: Half-space problems in the kinetic theory of gases are of great importance in the study of the asymptotic behaviour of solutions of boundary value problems for the Boltzmann equation for small Knudsen numbers. They provide the boundary conditions for the fluid-dynamic-type equations and Knudsen-layer corrections to the solution of the fluid-dynamic-type equations in a neighbourhood of the boundary. These problems are well-studied for monatomic species, especially for single, but to some extent also for multicomponent, gases. It is well-known that the number of additional conditions needed to be imposed depends on different regimes for the Mach number (corresponding to subsonic/supersonic evaporation/condensation). The case of polyatomic species is not as well studied in the literature. In this talk, we will discuss some models of polyatomic molecules based on the Boltzmann equation, as well as, some extensions of results for half-space problems for monatomic gases to the case of polyatomic gases, including results based on entropy inequalities.

Organizzatori: Andrea Bondesan, Maria Groppi

Funded by the European Union
MesoCroMo - Project n. 101110920