universität wien

Fakultät für Mathematik

Mathematisches Doppelkolloquium

Mittwoch, 15. Mai 2019
Sky Lounge

EINLADUNG

Mikaela Iacobelli
(Durham University)
„Recent results on singular limits for Vlasov-Poisson"

Alessio Figalli
(ETH Zürich)
„Regularity of interfaces in phase transitions via obstacle problems"

„Recent results on singular limits for Vlasov-Poisson"

Abstract:
The Vlasov-Poisson system is a kinetic equation that models collisionless plasma. A plasma has a characteristic scale called the Debye length, which is typically much shorter than the scale of observation. In this case the plasma is called 'quasineutral'. This motivates studying the limit in which the ratio between the Debye length and the observation scale tends to zero. Under this scaling, the formal limit of the Vlasov-Poisson system is the Kinetic Isothermal Euler system. The Vlasov-Poisson system itself can formally be derived as the limit of a system of ODEs describing the dynamics of a system of N interacting particles, as the number of particles approaches infinity. The rigorous justification of this mean field limit remains a fundamental open problem.

„Regularity of interfaces in phase transitions via obstacle problems"

Abstract:
The so-called Stefan problem describes the temperature distribution in a homogeneous medium undergoing a phase change, for example ice melting to water. An important goal is to describe the structure of the interface separating the two phases. In its stationary version, the Stefan problem can be reduced to the classical obstacle problem, which consists in finding the equilibrium position of an elastic membrane whose boundary is held fixed and which is constrained to lie above a given obstacle. The aim of this talk is to give a general overview of the classical theory of the obstacle problem, and then discuss recent developments on the structure of interfaces, both in the static and the parabolic settings.

15.00 Uhr: Kaffeejause

15.15 Uhr: Vortrag Mikaela Iacobelli

16:15 Uhr: Vortrag Alessio Figalli

vinum cum pane im Anschluss

Michael Eichmair
Christian Krattenthaler