



Leibniz
Universität
Hannover

Oberseminar Analysis und Theoretische Physik

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Sharp Interface Limit of a Navier–Stokes/Allen–Cahn System

We consider the sharp interface limit of a Navier–Stokes/Allen–Cahn system, when a parameter $\varepsilon > 0$ that is proportional to the thickness of the diffuse interface tends to zero, in a two dimensional bounded domain. In dependence on the mobility coefficient in the Allen–Cahn equation in dependence on $\varepsilon > 0$ different limit systems or non-convergence can occur. In the case that the mobility vanishes as ε tends to zero slower than quadratic or does not vanish we prove convergence of solutions to a smooth solution of a corresponding sharp interface model for well-prepared and sufficiently smooth initial data. In the first case the proof is based on a relative entropy method and the construction of sufficiently smooth solutions of a suitable perturbed sharp interface limit system. In the second case it is based on the construction of a suitable approximate solution and estimates for the linearized operator.

This is a joint work with Julian Fischer and Maximilian Moser (ISTA Klosterneuburg, Austria) and Maximilian Moser and Mingwen Fei (Anhui Normal University, Wuhu, China), respectively.

**Dienstag, 7.1.2025, 15:00 Uhr, Raum c311
Hauptgebäude der Leibniz Universität**

Dazu laden herzlich ein:

Prof. Dr. Wolfram Bauer, Prof. Dr. Joachim Escher, Prof. Dr. Johannes Lankeit,
Prof. Dr. Elmar Schrohe, Prof. Dr. Alexander Strohmaier,
Prof. Dr. Christoph Walker, PD Dr. Alden Waters