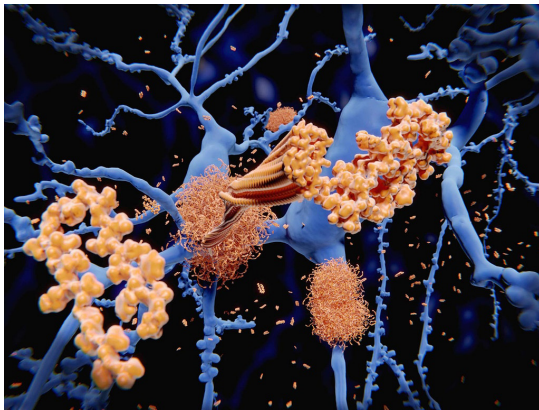


Friday, 12 December 2025 at 14:15

FU Berlin, Computer Science Building, Takustraße 9, Lecture Hall T9

Tea & Cookies starting at 13:00

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Barbara Niethammer*(U Bonn)*

The classical coagulation equation: gelation, self-similarity and oscillations

Coagulation equations, derived first by Smoluchowski in 1916, are flexible models which can be used to describe mass aggregation phenomena in a large variety of applications. Classical areas are aerosol physics or polymerization, but more recently coagulation equations have been also used in mathematical biology, medicine or economics.

Niethammer will give an overview of the basic properties of this model, explain some of the main challenges in its analysis and report on recent progress. Despite being rather simple looking, these models can exhibit very rich phenomena. This includes gelation (the creation of gigantic clusters and a corresponding loss of mass in finite time) and the development of oscillatory behaviour.

Barbara Niethammer is Professor at the Institute for Applied Mathematics at the University of Bonn. Her research focuses on the analysis of problems with multiple scales and high-dimensional dynamical systems as well as on the study of long-time behaviour in models of mass aggregation. Before moving to Bonn she held postdoctoral positions at the Courant Institute, Bonn and Leipzig, and faculty positions at HU Berlin and the University of Oxford. She was invited sectional speaker at the ICM 2014, Emmy-Noether lecturer at the annual DMV meeting in 2019 and received the von-Mises-Prize of GAMM and the Whitehead prize of the LMS.

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