Universität Hamburg
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Fakultät für Mathematik, Informatik
und Naturwissenschaften
Fachbereich Mathematik

Lothar-Collatz-Kolloquium über Angewandte Mathematik

Antrittsvorlesung / Inaugural lecture

Donnerstag, den 23. Oktober 2025, um 14:30 Uhr, im Hörsaal 6

Prof. Dr. Babette de Wolff*
(Universität Hamburg, Fachbereich Mathematik, Angewandte Mathematik)

Networks, delays and patterns

Zusammenfassung/Abstract:

Network dynamical systems model processes where several dynamical units — for example neurons, species, or people — interact with one another. In such systems, time delays naturally arise, since information between several units travels at finite speed. In this talk, we will focus on how the combination of a network structure and time delays can lead to the existence of patterns (in a way to be made precise) in the dynamics.

In the first part of the talk, we will discuss how we can model systems with time delays, and how we can interpret the resulting equations as infinite dimensional dynamical systems. In the second part of the talk, we will then focus recent work on delay-coupled oscillators, and discuss how dynamical systems tools — such as invariant manifold reduction — can help us to find and understand patterns.

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