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Oberseminar im Institut für Angewandte Analysis

Wintersemester 2025/26

Im Rahmen des Oberseminars spricht am Freitag, den **14. November 2025**:

Daniel Hauer

Brandenburg Technical University Cottbus-Senftenberg

Harnack inequalites via a multi-point maximum principle

In this talk, I present a new method of proving global pointwise Harnack inequalities for positive solutions of parabolic equations, such as the classical parabolic Schrödinger equation. The novelty of our approach is that our method does not relay on a maximum principle and we only require that the solutions are twice continuously differentiable with respect to the spatial variable. In particular, we derive global Harnack inequalities directly avoiding the differential form of the Harnack inequality as it is done in the classical approach by Bénilan Aronson or by Li-Yau. Our method can be adapted to the notion of viscosity solutions and to treat the classic parabolic porous medium equation, and the p-heat equation.

This talk is based on the recent preprint: https://arxiv.org/abs/2509.07575 and obtained in joint work with Ben Andrews (Australian National University in Canberra) and my PhD student Jessica Slegers (BTU Cottbus-Senftenberg and the University of Sydney).

Der Vortrag findet in **Raum E.60, Helmholtzstr. 18** statt.
Beginn: 14 Uhr (c.t.). Alle Interessierten sind herzlich eingeladen.

W. Arendt, A. Dall'Acqua, A. Schlichting, R. Zacher.