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OBERSEMINAR IM INSTITUT FÜR ANGEWANDTE ANALYSIS Sommersemester 2026

Im Rahmen des Oberseminars spricht am Montag, den **1. Juni 2026**:

ANDREA AGAZZI

Universität Bern

Clustering Dynamics in Mean-Field Models of Transformers

Transformers are a central architecture in modern deep learning, forming the backbone of large language models such as ChatGPT. In this talk, I will present a mathematical framework for studying how information propagates through the layers of such neural networks. Specifically, we consider a family of partial differential equations that describe how the distribution of "tokens" (units of information on which the network acts, modeled as particles interacting in a mean-field way) changes with depth.

Numerical experiments reveal that, under certain conditions, these dynamics exhibit a metastable clustering phenomenon, where tokens group into well-separated clusters that evolve slowly over time. A rigorous investigation of this behavior uncovers a range of open questions and unexpected connections to analysis and other areas of mathematics.

Der Vortrag findet in **Raum E60, Helmholtzstr. 18** statt.
Beginn: 16 Uhr (c.t.). Alle Interessierten sind herzlich eingeladen.

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