

JOHANNES GUTENBERG-UNIVERSITÄT MAINZ - 55099 Mainz

Einladung zum Vortrag
im Oberseminar Analysis

***Pattern formation in a planar neural field
model and its reduced dynamics in
two dimensional systems***

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The structure of a real cortex can be seen as the construction of large numbers of micro and macro columns each comprising of laminated substructures. Enormous numbers of neurons and synapses are situated in each small piece of these columns. The average activity within a column has been studied using neural field models, playing a crucial role in describing the coarse grained dynamics of cortical tissue. Neural field models with linear spike frequency adaptation are known to support a wide range of patterns of spatio-temporal activity of the brain. These patterns include spots, associated with working memory, as well as more sophisticated self-sustained spiral wave patterns, usually linked to sleep-like states and pathological conditions such as geometric hallucinations and epileptic seizures. These patterns in the integro-differential equation system are naturally defined by the interface between low and high states of neural activity, rather than the more computationally expensive space-time model. Dimensionally reduced system of equations can be derived using a recent interface approach.

Alle Interessierten sind herzlich eingeladen!

Datum: Freitag, 15.07.2022

Uhrzeit: 10:15 Uhr

Ort: 04-512

FACHBEREICH 08

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