

# Open PhD position : Complex Dynamical Systems - Cognitive System Theory

At the Institute for Theoretical Physics  
Goethe University Frankfurt

Applications are invited for a fully funded PhD position at the Institute for Theoretical Physics, Frankfurt University

Fields: complex systems theory, computational neurosciences ,  
neural models and networks, dynamical systems

Application deadline: April 27, 2014  
Supervisor: Prof. Dr. Claudius Gros

We are developing new models and generative principles for the brain using a range of toolsets from dynamical systems theory and computational neurosciences. Examples are new objective functions and generating functionals for multistability, transient state dynamics and self-limiting Hebbian plasticity rules. Several subjects are available for the announced PhD thesis including studies of the brain dynamics and of attractor metadynamics, using generating functionals, and/or studies of new synaptic plasticity rules interpolating smoothly between spiking and rate-encoding neurons. The work will include analytical investigations and numerical simulations of neural models and neural networks, using the toolset of dynamical systems theory.

The candidates should have a Diploma/Master in physics with an excellent academic track record and good computational skills. Experience or strong interest in the fields of complex systems, computational neurosciences, dynamical systems theory and/or artificial or biological cognitive systems is expected. The degree of scientific research experience is expected to be on the level of a German Diploma/Master.

The appointments will start summer 2014, for up to three years. Interested applicants should submit a curriculum vitae and a list of publications, and arrange for two letters of reference to be sent to the address below.

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Information about the relevant textbook can be found at:

<http://itp.uni-frankfurt.de/~gros/Vorlesungen/CADS/>

