UNIVERSITÄT LEIPZIG

Peter Debye Lecture

Friday, July 1, 2022 at 11:25

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Biological signal processing across scales

In contrast to many physical systems, biological systems have the remarkable architecture of being organized into a spatial hierarchy of non-equilibrium processes: from molecules embedded into sub-cellular compartments and cells interacting in tissues to complex ecosystems. In my talk I will show how biological systems manipulate the transmission of noise and information between and across these discrete scales in order to perform biological functions. By combining theory and experiments I will first show how social insects integrate molecular and colony-scale processes in order achieve phenotypic plasticity. I will then show how cells manipulate the transmission of noise and signals across scales in the regulation of cell death and the immune response. Taken together, our work gives a new perspective on how biological systems react and respond to fluctuating signals.

Venue: Lecture Hall for Theoretical Physics, Faculty of Physics and Earth Sciences, Linnéstraße 5, 04103 Leipzig