

Eugene Wigner Colloquium

joint event of GRK 1558 and SFB 910



Prof. Matthias Schneider

Technische Universität Dortmund

“From Physics to Biology: Pulses, Fluctuations, Non-linearities... Living State”

Life is full of hydrated interfaces that all have to obey the 2nd Law. The enormous power of this realization and its consequences for life were first pointed out by K. Kaufmann starting in the late 80ies. This work is strongly inspired by his work.

We demonstrate a direct link between thermodynamic state and (biological) function using Einstein's approach to thermodynamics. Including transitions we introduce a concept for specificity, which is based on thermodynamics. Further we show that pulses (linear and non-linear) can propagate through soft (biological) interfaces and can turn enzymes on and off.

Taken together, fluctuations, pulses and (thermodynamic) transitions built a physical concept for biological communication, which is applied to nerve pulse propagation and which forms the cornerstone of a new attempt to understand the origin of multicellular life and health.

Importantly, this mind set is in strong contrast to the molecular approach, where specific lock and key interactions and diffusion play crucial roles.

Thursday, 19.10.17 · 16:15h · EW 202

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