

# Eugene Wigner Colloquium

*joint event of GRK 1558 and SFB 910*



## Dr. Anna Zakharova

TU Berlin

### “Chimera patterns in networks: interplay of dynamics, structure, noise, and delay”

Time delay and stochasticity arise naturally in real-world systems. The interplay of time delay with network topology, nonlinearity, and noise leads to a plethora of complex phenomena with applications to various fields. We investigate peculiar partial synchronization patterns, chimera states. These hybrid states are made up of spatially separated domains of synchronized and desynchronized behavior. They arise surprisingly in networks of identical units and symmetric coupling topologies. We analyze different chimera types occurring in paradigmatic models of nonlinear dynamics, the Stuart-Landau oscillator and the FitzHugh-Nagumo model. In particular, we investigate amplitude chimeras, chimera death and coherence-resonance chimeras. We focus on the role of time delay and stochasticity for these synchronization-desynchronization patterns and address the question of robustness and control of chimera states. Moreover, we demonstrate how noise and time delay can induce new dynamical behavior.

---

**Thursday, 09.11.17 · 16:15h · EW 202**

Technische Universität Berlin · Institut für Theoretische Physik · Hardenbergstraße 36 · 10623 Berlin  
[www.itp.tu-berlin.de/grk1558](http://www.itp.tu-berlin.de/grk1558) · [www.itp.tu-berlin.de/sfb910](http://www.itp.tu-berlin.de/sfb910)

**GRK1558**  
research training group