

**Colloquium**  
**Dahlem Center for Complex Quantum Systems**

**Topological and PT-symmetric photonic systems**

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**Time: Tuesday, May 12, 2015, 16:00 c.t.**

**Location: Hörsaal A (1.3.14)**

Abstract:

Topological photonic systems [1] generate robust modes whose properties are well controlled. A difference to the original electronic context, from which these concepts are borrowed, are photon creation and annihilation processes, which induce a new class of exploitable symmetries but also serve as an extra source of noise. I illustrate these concepts for two examples: PT-symmetric Lasers [2] and the selective amplification of a topologically induced defect mode [3].

[1] L. Lu, J. D. Joannopoulos, and M. Soljacic, Topological photonics. Nat. Photon. 8, 821 (2014).

[2] H.Schomerus, Quantum Noise and Self-Sustained Radiation of PT-Symmetric Systems, Phys. Rev. Lett. 104, 233601 (2010).

[3] C. Poli, M. Bellec, U.Kuhl, F. Mortessagne, H. Schomerus, Nat Communications 6, 6710 (2015)