



TECHNISCHE UNIVERSITÄT
CHEMNITZ

Institut für Physik Physikalisches Kolloquium



Mittwoch, 21.06.2017, um 16:00 Uhr

Ort: Reichenhainer Str. 90;
Zentrales Hörsaal- und Seminargebäude,
Raum 2/N013

Prof. Dr. Stephan W. Koch

Fachbereich Physik
Philipps-Universität Marburg

Physics and Applications of Optically Active Semiconductor Nanostructures

Currently, we are at an early stage in the century of the photon. Research and development efforts flourish in the novel field of photonics which constitutes the interface between the traditional disciplines of optics, physics, material science, electrical engineering, nanotechnology, and chemistry. In this innovative context, semiconductor light emitters – especially lasers – play a decisive role.

The continuing device miniaturization and the advances in very-high-density system integration require smaller and smaller structures. In this process, the characteristic dimensions have long crossed the border from the macroscopic world into the realm of microscopic quantum features. This progress has been enabled by the increasingly widespread availability of high-quality semiconductor material growth.

In this talk, I will give a brief overview of the basic theory needed to describe the interaction processes among the microscopic constituents of modern semiconductor lasers. I will show, how one can identify the relevant quantum-mechanical effects needed to develop a systematic and efficient modeling scheme. As applications, I will discuss semiconductor microcavity laser configurations which have been designed by us to yield extremely high output powers or ultrashort pulses in a mode-locking configuration. Experimental realizations will be presented showing world record emission properties.

Alle Zuhörer sind ab 15:45 zu Kaffee und Tee vor dem Hörsaal eingeladen.

Informationen zum Vortrag erteilt:

Prof. Dr. Ulrich Theodor Schwarz, Tel.: 0371 531-30001



www.tu-chemnitz.de/physik