

Einladung

- Es spricht: **Prof. Dr. Ortwin Hess,**
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University of Surrey
Guildford, England
- Zeit: **Donnerstag, 26. Januar 2006, 14:15 Uhr**
- Ort: **Technische Universität Berlin
Institut für Festkörperphysik
Hardenbergstraße 36, 10623 Berlin
Raum PN 561**
- Thema: **„Modelling of Photonic Nano-Materials and
Ultrafast Optoelectronic Devices“**

Abstract:

Today's progress in the materials sciences and nano-technologies open up the realization of novel photonic materials and devices with designed characteristics and functionalities: Photonic crystals and synthetic opals guide and control light, semiconductor quantum dots become customized coherent photon sources and gain-material for new lasers.

The talk gives an overview of the theory and computer modelling of these novel complex photonic materials and the spatio-temporal dynamics of novel lasers. It reports on advances in three-dimensional Finite-Difference Time-Domain (FDTD) simulations of the materials properties and the design the functionality of complex layered planar photonic crystals and inverse opals. 3D Maxwell-Bloch FDTD simulations of microdisk and microgear lasers reveal the lightfield and active medium dynamics leading to an ultrafast rotation of the WG mode in microdisc lasers and its arrest in microgear structures. Multi-scale non-linear partial differential Maxwell-Bloch equations form a basis for the simulation of three-dimensional inhomogeneous quantum dot ensembles that give an insight into the complex dynamics of quantum dot lasers.

Gäste sind herzlich willkommen!

Prof. Dr. D. Bimberg