Christian Jirauschek

Dr. Christian Jirauschek
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Professional experience

TU München, Munich, Germany since February 2007
Head of Emmy Noether Research Group, Institute for Nanoelectronics

- Project title: "Modeling of novel quantum cascade lasers and related devices for terahertz, infrared and communications applications"
- Further DFG project "Modeling of novel mode locked and Fourier domain mode locked fiber ring cavity lasers"
- Lecture "Simulation of Quantum Devices"
- Lecture "Laser Technology"

TU München, Munich, Germany April 2005 – January 2007
Postdoc at Institute for Nanoelectronics (Prof. Paolo Lugli)

- Developed the in-house Monte Carlo simulation tool further
- Carried out simulations of carrier transport in experimental quantum cascade laser structures

MIT, Cambridge, MA April 2002 – March 2005
Visiting Scientist at Research Lab of Electronics (Prof. Franz X. Kärtner)

- Theoretical investigations in the area of femtosecond optics, quantum devices and mode-locked quantum cascade lasers
- Performed analytical calculations and developed numerical simulation tools

Universität Karlsruhe, Karlsruhe, Germany December 2000 – March 2002
Research Assistant at Institute of High-Frequency and Quantum Electronics (Prof. Franz X. Kärtner)

- Theoretical investigations in the area of femtosecond optics and dynamics of quantum devices
- Teaching assistant for "Optical Communications Laboratory" and "Optical Communications 3 (Selected Components and Techniques)"

SRI International, Menlo Park, CA October 1999 – January 2000
Research Fellow at Molecular Physics Laboratory (Dr. Gregory W. Faris)

- Measurements on stimulated Rayleigh and Brillouin scattering in liquids
- Performed experiments on supercritical fluids
- Wrote programs for evaluation of experimental data

Education

University of Karlsruhe, Germany
Dr.-Ing. (PhD) in Electrical Engineering, July 2004, graduated "Mit Auszeichnung" ("with distinction")

- Thesis with Professor Franz X. Kärtner (Universität Karlsruhe/MIT) on "Few-cycle laser dynamics and carrier-envelope phase detection"
- Referees: Prof. Werner Wiesbeck/Prof. Franz X. Kärtner

University of Karlsruhe, Germany
Dipl.-Ing. (M.S.) in Electrical Engineering, September 2000 (final grade 1.1, best final grade in academic year 1999/2000)

- Thesis with Professor Franz X. Kärtner on spatio-temporal pulse dynamics in sub-10fs lasers
- Concentration: Optical Communications and Electrooptics

Awards and honors

- Senior Member of the Optical Society of America (2012)
- Emmy Noether fellowship of the Deutsche Forschungsgemeinschaft (2007)
- University Award of the Kühborth Foundation (2nd prize), for excellency and short length of pre-Ph.D. studies at the University of Karlsruhe (2001)
- Faculty Award for best final degree (2001)
- IPP Award (Faculty Award for best Pre-Diploma) (1998)
- Scholarship of the German National Merit Foundation (Studienstiftung des deutschen Volkes) (1998)
- Selected for Siemens International Student Program (1998)
- High School Award for best Abitur (high school diploma) (1994)
- High School Award of the German Chemical Industry Association (VCI) (1994)

Research interests

Modeling in photonics and nanoelectronics/nano-optoelectronics:

- Semiconductor lasers, quantum cascade lasers
- Optical fiber lasers, amplifiers and systems
- Nonlinear optical effects
- Simulation of quantum devices, Monte Carlo and quantum transport
- Terahertz technology
- Laser dynamics, mode locked lasers
- Fourier domain mode locked lasers for biomedical imaging
- Ultrafast phenomena in optics and electronics
- Development and improvement of numerical methods

Teaching experience

- Lecture “Laser Technology”
- Lecture “Simulation of Quantum Devices”
- Exercise “Optical Communications 3 (Selected Components and Techniques)”
- Practical course “Optical Communications Laboratory”

Affiliations

- IEEE (IEEE Photonics Society)
- Optical Society of America (Senior Member)
- Deutsche Physikalische Gesellschaft

Professional services

- Program Committee member for International Workshop of Computational Electronics (IWCE 2012)
- Reviewer for several grant proposals
- Reviewer for several international journals

  (IEEE Journal of Quantum Electronics; IEEE Journal of Selected Topics in Quantum Electronics; Optics Express; Optics Letters; Journal of the Optical Society of America B; Physical Review Letters; Physical Review A; Physical Review E; Applied Physics Letters; Journal of Applied Physics; Journal of Computational Electronics; Optics Communications; Semiconductor Science and Technology; Applied Mathematics and Computation)