

NANOSIL Workshop on Convergence of Electronics and Photonics

Location: Großer Hörsaal Physik 28D001, Sommerfeldstraße 28, 52074 Aachen

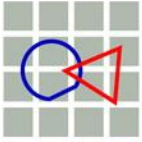
Preliminary Program

October 1st 2009

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|-------|-------|---|
| 13:45 | 14:00 | Welcome and Introduction
Heinrich Kurz (AMO GmbH) |
| 14:00 | 14:35 | tbd at the ES-Meeting of NANOSIL |
| 14:35 | 15:10 | Silicon-nanophotonic-based THz generation
Michael Nagel (RWTH Aachen University) |
| 15:10 | 15:25 | coffee break |
| 15:25 | 16:00 | Third Generation Photovoltaics: Multiple Energy levels for higher efficiencies
Gavin Conibeer (University of New South Wales) |
| 16:00 | 17:00 | coffee break and networking |
| 17:00 | 19:00 | Walter Schottky Lecture
Bridging optics and electronics with plasmonics: Quantum Cascade Lasers as widely tailorable light sources from the mid-infrared to sub-millimeter waves
Frederico Capasso (Harvard University) |

October 2nd 2009

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| 10:00 | 12:00 | Privatissimum (Room 24C S1, same building)
Sub-wavelength Photonics: From light manipulation to quantum levitation at the nanoscale
Frederico Capasso (Harvard University) |
| 12:00 | 14:00 | Lunch and Poster Session at AMICA/AMO GmbH
Otto-Blumenthal-Str. 24, in close proximity |
| 14:00 | 14:45 | Electro-optical integration technologies for future computing systems
Bert Offrein (IBM) |
| 14:45 | 15:30 | Nanoscale silicon photonic interconnection networks for ultra-energy efficient multicore computing
Keren Bergmann (Columbia University) |
| 15:30 | 16:15 | Conclusion and Wrap-Up
Heinrich Kurz (AMO GmbH) |



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Privatissimum

For students and PhD students only

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Sub-wavelength Photonics: from light manipulation to quantum levitation at the nanoscale

Frederico Capasso
School of Engineering and Applied Sciences
Harvard University, Cambridge MA 021138

Surface Plasmon Polaritons (SPPs) allow one to achieve concentration of light into sub-wavelength regions thus opening up rich new directions in physical optics and photonics.

A wide range of phenomena and applications enabled by SPPs and bridging several fields, are currently being investigated by our group and will be presented in this talk: (a) plasmonic collimators that have allowed to dramatically reduce the divergence of semiconductor lasers, creating exciting opportunities in beam engineering; (b) plasmonic polarizers for arbitrary control of laser polarization; (c) new light sources such as plasmonic laser antennas, capable of creating intense nanospots for spatially resolved chemical imaging and ultra high density optical storage; (d) antenna arrays for surface enhanced Raman scattering; (e) frequency selective surfaces enabled by a new soft lithography technique; (f) optomechanical forces between waveguides at sub-wavelength distances. Finally at this distance scale forces arising from quantum fluctuations of the electromagnetic field cannot be neglected give rising to both attractive and repulsive Casimir forces. The latter, recently measured by us for the first time, could lead to ultralow friction mechanical devices based on quantum levitation.