



# Institutskolloquium

Am Freitag, 18. Januar 2008 um 16:00 Uhr spricht

**Prof. Dr. Stephen T. Cundiff**

**JILA, National Institute of Standards and Technology and  
University of Colorado at Boulder, USA**

über

## “Optical Two-dimensional Fourier Transform Spectroscopy of Semiconductors”

Abstract: Multidimensional Fourier Transform spectroscopy was originally developed in NMR and proved to be very powerful for elucidating coupling between nuclei. We have developed an optical implementation of two-dimensional Fourier Transform spectroscopy and are using it to study direct gap semiconductors and semiconductor heterostructures. The 2D spectra provide unambiguous evidence that many-body interactions dominate the optical signals. The phase resolution provides previously inaccessible information into the microscopic origins of the many-body interactions. Excitation of continuum states shows that they do not simply behave as an inhomogeneously broadened ensemble of 2-level systems. Comparison to a microscopic many-body theory provides good agreement with the experiments, but only when the full theory including correlation terms beyond Hartree-Fock is used..

**Ort: Max-Born-Saal,  
MBI, Max-Born-Str. 2a**

Prof. Dr. Th. Elsässer