



Seminarankündigung

**Dienstag, 02. Oktober 2012
12:30 Uhr**

ZNN, Seminarraum EG 0.001

“Toward the manipulation of Terahertz wave and 2DES interactions”

Abstract: Various low-dimensional electron systems offer rich physical mechanisms allowing for fine tuning of the electronic structures and transport properties. Among those, the two dimensional electron system (2DES) has long been one of the most intensively studied systems in terahertz frequency regime, particularly due to the fact that it offers the excitations of sub-bands and plasmons, the high mobility, and their tunable nature by the Schottky field effect. In this talk, I will present our recent results on the coupling between terahertz wave and 2DES by using different methods.

The 2DES in AlGaIn/GaN heterostructures is used for this purpose since it offers both high electron density and high electron mobility. By integrating a grating-coupled 2DES into a Fabry-Pérot cavity, we observed a strong coupling between the terahertz cavity mode and the 2D plasmon mode. In a high-electron-mobility transistor integrated with a set of dipole antennas, we experimentally and theoretically verified the existence of strongly-localized terahertz fields and the resulting terahertz self-mixing current. In a bow-tie antenna device, a gate-controlled plasmon cavity is realized and verified by probing the resonant photocurrent together with the non-resonant self-mixing current.

Prof. Hua Qin
Key Laboratory of Nanodevices and Applications,
Suzhou Institute of Nanotech and Nanobionics,
Chinese Academy of Sciences
China