



## Einladung zum Physikalischen Kolloquium

Montag, 20.04.2015  
16:15 Uhr in N24/H13

**Prof. Dr. Tönu Pullerits**  
Chemical Physics  
Lund University, Sweden



### Next generation of coherent spectroscopies: towards *in situ* touch of quantum dynamics

Recently there has been growing interest in the role of coherence in electronic dynamics. Coherent multidimensional spectroscopy (CMS) has been used to reveal coherent phenomena in numerous light harvesting systems, natural and artificial. Here we utilize a recent implementation of CMS – two-dimensional photocurrent spectroscopy (2DPS), in which we detect the photocurrent from a PbS quantum dot (QD) photocell resulting from its interactions with a sequence of four ultrafast laser pulses. We observe sub-picosecond evolution of 2D spectra consistent with multiple exciton generation. Moreover, a comparison to 2D fluorescence spectra of the QDs demonstrates the potential of 2DPS to elucidate the detailed origin of photocurrent generating electronic state coherence pathways. Since the measurement is based on detecting the photocell current *in situ*, the method is well suited to study fundamental ultrafast processes that affect the function of the device. This opens new avenues for the investigation of coherent optimization strategies not only within materials and devices but even in photon-driven biological systems.



Ab 15.45 Kaffee, Tee und Kekse vor dem Hörsaal H13

Organisation: Prof. Dr. F. Jelezko, Tel. 23750

Host: Prof. Dr. S. Huelga, Tel. 22901, off.: 22911