



# Seminarankündigung

**Dienstag, 7. November 2017**

**13:00 Uhr**

**WSI, Seminarraum S 101**

## **“Color centers in diamond: Magnetic and near field sensors at the nanoscale”**

Individual, luminescent defects in diamond, i.e. color centers, are stable, atomically-sized, solid-state quantum systems. Nitrogen vacancy (NV) centers represent single electronic spins that can be coherently manipulated using microwave radiation and read-out using confocal laser fluorescence microscopy even for single centers. Due to their atomic size and coherent spins, individual NVs form nanoscopic quantum sensors e.g. for magnetic fields and optical near fields. To enable truly nanoscale sensing, it is mandatory to incorporate the centers into highly-functional photonic nanostructures. These structures enable scanning an NV center close ( $< 50$  nm) to a sample to obtain nanoscale resolution. Simultaneously, they enable high photon rates from single centers. Nanostructures can be formed either in bottom-up or top-down processes, while numerical simulations aid in optimizing their geometry. We give examples of the applications of the nanoscale quantum sensors, e.g. for the investigation of nanoscale magnetic effects in superconductors.

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