IQ ST | INTEGRATED QUANTUM SCIENCE AND TECHNOLOGY

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Invitation to IQST Seminar

on Wednesday, May 2nd, 2018, 12pm
Ulm University
H7
Albert-Einstein-Allee 11

Luis A. Orozco
Joint Quantum Institute, Department of Physics, University of Maryland and NIST, College Park, MD 20742 USA

Optical Nanofibers: A platform for quantum optics

Nanofibers produced by tapering an ordinary single mode optical fiber to diameters of half a micron are interesting optical objects. Evanescent fields, with large gradients, develop as the radius reaches less than the wavelength of light posing puzzles, questions, and opportunities to study the interaction of light and atoms. Our recent experiments with cold Rb atoms around the nanofiber include the modification of the lifetime of the D2 line in the presence of the nanofiber and its relation to the single atom coupling. We find modifications of the lifetime that depend on the alignment of the dipole with respect to the nanofiber: parallel or perpendicular. We also explore collective effects (super-radiance and sub-radiance) in the atomic decay from the atomic excited that depend on the number of atoms interacting in the evanescent mode of the nanofiber.

Host: Prof. Dr. Johannes Hecker Denschlag, Institut für Quantenmaterie, Ulm University