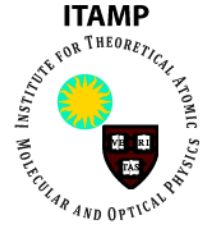




HARVARD Quantum Optics Center



Joint Quantum Sciences Seminar

Wednesday | Apr. 17 | 4:00 pm
Jefferson 250

Harald Hess

**Howard Hughes Medical Institute, Janelia Farm Research
Campus**

"3D Imaging at the Limits with Photo-Activated Labels and Electrons"

Fluorescence microscopy, is limited in its ability to resolve densely labeled features smaller than the optical diffraction limit, however special photoactivated fluorescent proteins or dyes can be harnessed in a technique called Photo-Activated Localization Microscopy, PALM. A series of personal challenges in fiber optics, fly height testing, and high throughput disk drive screening provided a diverse foundation in interferometry that inspired a new 3D imaging concept. This multiphase interferometry one can measure the vertical position of fluorescent molecules to nanometer precision with the highest photon efficiency and can be combined with PALM to give full 3 dimensional molecular coordinates of genetically tagged proteins with $\sim 10\text{-}20$ nm resolution. In a complimentary 3D project, electron microscopes, EM, can be customized for high throughput imaging for neural tissue or cells. Correlating PALM and electron microscopy gives EM images, which can be colorized with specific protein locations.

Student Presentation by Yat Shan Au, Graduate Student, Doyle Lab
Student Presentation will begin at 4:00 PM
Guest Presentation will begin at 4:30 PM
Refreshments will be provided