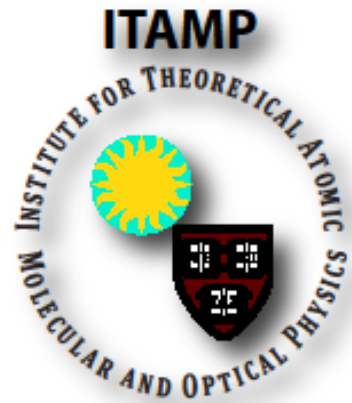


SPECIAL COLLOQUIUM



Prof. Marlan O. Scully

*Texas A&M University, College Station, TX77843
Princeton University, Princeton, NJ 08544*

Friday, October 19, 1:30 pm

Jefferson 250

“VIRTUAL PHOTONS: From Lamb’s shift and Unruh’s radiation to superradiance and solar cells”

Abstract:

The effects of virtual photons are very real. The Lamb shift and Unruh radiation are examples. It may even be possible to make real advances from virtual processes in solar cells. The three main topics to be covered are:

1. The Lamb Shift Yesterday, Today, and Tomorrow.
2. Unruh Radiation is a (Virtual) Parametric Process
3. Lasing Without Inversion and Enhanced Photocell Operation via Fano Interference

1. M. Scully, “Collective Lamb Shift in Single Photon Dicke Superradiance”, *Phys. Rev. Lett.*, 102, 143601 (2009).
2. M. Scully, V.V. Kocharovskiy, A. Belyanin, E. Fry, and F. Capasso, “Enhancing Acceleration Radiation from Ground-State Atoms via Cavity Quantum Electrodynamics”, *Phys. Rev. Lett.* 91, 243004 (2003).
3. M. Scully, “Quantum Photocell: Using Quantum Coherence to Reduce Radiative Recombination and Increase Efficiency”, *Phys. Rev. Lett.* 104, 207701 (2010).