

Baylor University and the Office of
the Vice Provost for Research present:

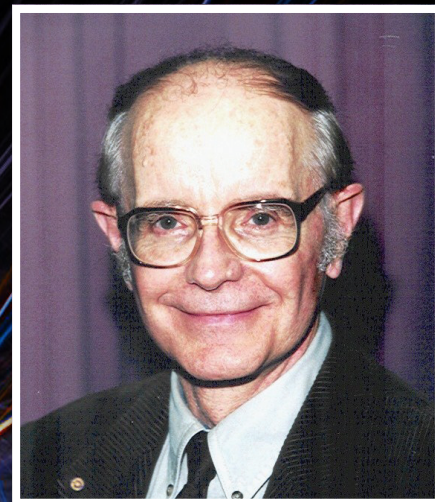
Dr. Marlan Scully

Baylor University, Texas A&M University and
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Director, Institute for Quantum Studies

*Distinguished Research Chair, Texas
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Member, National Academies of Science



Quantum Photocell: Using Quantum Coherence to Reduce Radiative Recombination and Increase Efficiency*

*M. Scully, Phys. Rev. Lett., 104, 207701 (2010).

The fundamental limit to photovoltaic efficiency is widely thought to be radiative recombination which balances radiative absorption. We here show that it is possible to break detailed balance via quantum coherence, as in the case of lasing without inversion and the photo-Carnot quantum heat engine. This yields, in principle, a quantum limit to photovoltaic operation which can exceed the classical one. The present work is in complete accord with the laws of thermodynamics. Possible applications to solar cells and photosynthesis will be discussed.

**Friday, February 3, 2012, 3:45 PM
Baylor Sciences Building, Room E.125**

Join us for a reception with Dr. Scully before the event,
beginning at 3:15 PM in the E-2 elevator landing.



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