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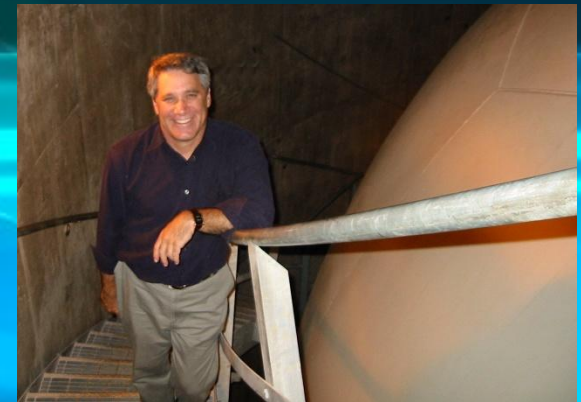
Department of Physics Colloquium



“Neutrinos: What’s New and Where Are We Going”

Two recent results from neutrino oscillation experiments are shaping the future course of the field. First, measurements of the “little mixing angle” θ_{13} have shown that the mixing among all three types of neutrinos is fairly large. This opens up a new era for exploring the key unknowns of neutrino oscillations including determining the mass ordering of the neutrinos and whether oscillations exhibit CP violation. CP violation in the neutrino sector is a key ingredient in “Leptogenesis” models that use such violations in the early universe to obtain the observed matter-antimatter asymmetry. Second, there is mounting evidence that there may be new types of neutrinos that have no standard model interactions, sometimes referred to as “sterile” neutrinos. Establishing the existence of sterile neutrinos would be a major result for particle physics and is one of the experimental challenges for the future program. This talk will describe the current experiments and measurements associated with neutrino mixing and sterile neutrinos and then show how these results are guiding the field towards an exciting new experimental program to make definitive measurements.

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Monday, November 12, 2012 : 428 Pupin Hall / 4:10 PM