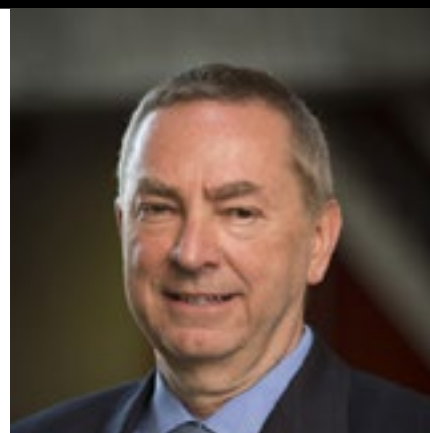


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Neutrinos... Going International Towards a New Understanding of the Quantum Universe

Department of Physics Colloquium



WISCONSIN

Neutrinos are the most numerous massive particles in the universe. The masses are tiny and unknown, which neutrino is heaviest is unknown, and whether the neutrino is a Majorana particle is unknown. We do not know how the Higgs field provides mass to the neutrino. Indeed, the complete chapter on mass and fermion family patterns has yet to be written and at the heart of this discussion is the ubiquitous neutrino. Neutrino masses influence the cosmic microwave background polarization. Neutrinos are a possible source of CP violation in the universe that may play a role in generating the matter excess in the universe. Each of these questions is developing as one of the main quests in particle physics throughout the world. As Fermilab develops its plan for the next two decades with partners around the world, the neutrino will be front and center.