Spring 2025 Physics Colloquium

Wednesday, January 22nd

3:00 PM

PAS 224 or Zoom

(https://arizona.zoom.us/j/81283840289)

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Low-Energy Electroweak Processes as Precision Laboratories

Abstract: Low-energy experiments at the precision frontier are crucial for testing the Standard Model (SM) and probing physics beyond the Standard Model (BSM), which is necessary to explain many significant phenomena observed in the universe. Accurately interpreting the results of these experiments requires highly precise theoretical predictions of the SM background and the strength of potential new physics signals, which are often challenging due to the involvement of Quantum Chromodynamics (QCD) in its non-perturbative regime.

In this talk I will present a selection of my research, which focuses on high-precision studies of hadronic and nuclear physics relevant to precision tests of the SM through various low-energy electroweak processes: charged weak decays, lepton-nucleus scattering, searches for permanent electric dipole moments, and hadronic parity violation. I also will discuss the interplay between our theoretical studies of precision electroweak physics and ongoing or planned experimental programs investigating strong interaction physics, highlighting exciting opportunities for interdisciplinary collaboration.

**** Refreshments served in PAS 218 at 2:30 PM – 3:00 PM ****

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