

CSU PHYSICS COLLOQUIUM

“Short-Baseline Neutrino Program at Fermilab: Physics Beyond the Standard Model ”

Bob Wilson

Colorado State University

120 Engineering (Hammond Auditorium)

Monday, September 18th at 4:00 PM

Abstract

As an undergraduate contemplating graduate school in high energy physics, I declined a research assistantship to work on a neutrino experiment because neutrinos weren't interesting ... they were massless and weakly interacting so produced frustratingly few events to analyze even in massive detectors. How things have changed! The more we learn, the more we realize the importance of the most abundant known matter particle in the universe. In the decades since my naive snubbing of this intriguing particle we have developed a well-established three-flavor paradigm that may help explain the matter-antimatter asymmetry of the universe. Yet beyond that, a few intriguing measurement “anomalies” hint at the existence of something stranger still, a neutrino that does not interact via any known forces except gravity, a *sterile* neutrino.

Biography

Robert Wilson earned his Bachelor of Science degree in Mathematics and Physics at the University of London in England and his Master of Science and Doctor of Philosophy degrees in Physics from Purdue University, West Lafayette, Indiana. He received post-doctoral training at Stanford Linear Accelerator Center and held a faculty appointment at Boston University before moving back west to help establish a new research group at Colorado State University in 1992. He is a professor in the Department of Physics and was College of Natural Sciences Professor Laureate for 2021-23. Professor Wilson has contributed to over 500 refereed scientific and technical publications and is a co-recipient of the 2016 Breakthrough Prize in Fundamental Physics for work with the T2K collaboration in Japan. He has served as deputy leader of the ICARUS collaboration led by Nobel Laureate Carlo Rubbia; as a member of the board of directors of the Sanford Underground Research Facility (SURF) and the SURF Foundation; and was co-leader of the Long-Baseline Neutrino Experiment (LBNE) that became the 200-institution, 30-country Deep Underground Neutrino Experiment (DUNE) collaboration. He is currently working on DUNE and data analysis with two CSU students and a post doc on the Short-Baseline Neutrino program at Fermilab.