

CSU PHYSICS COLLOQUIUM

“The Anatomy of a Neutrino Measurement”

Norm Buchanan

Colorado State University

Monday October 18th at 4:00pm

120 Engineering (Hammond Auditorium)

Abstract

The study of neutrinos is a major area of interest in particle physics. Currently operating accelerator-driven neutrino experiments, such as the NOvA experiment, are providing answers to some of the longstanding questions of how neutrinos mix between themselves, how they interact with matter, and what they might tell us about the universe. In this talk I will focus on aspects of making neutrino measurements, specifically measurements of neutrino-nucleus interactions. I will discuss challenges unique to neutrino interaction analyses, as well as some challenges shared with other high-energy physics studies and beyond. Examples will be taken from ongoing and completed NOvA measurements.

Biography

Norm Buchanan is an Associate Professor in the Department of Physics at Colorado State University specializing in high-energy physics, specifically neutrino physics, high-performance computing, and detector design. He received his PhD from the University of Alberta in 2003 and worked on the ATLAS experiment at the LHC and the DZero experiment at Fermilab before moving to neutrino physics. Since joining the CSU faculty he has been studying neutrino physics as part of the T2K, NOvA, and DUNE collaborations. Currently, he is also investigating the use of high-performance computing resources to improve the way neutrino analyses are performed. Buchanan has held leadership roles on several particle physics experiments including Run Coordinator for the DZero and T2K experiments, ND280 Pi Zero Physics Convener for the T2K experiment, project leader of the DUNE photon detection system, and currently as leader of the NOvA data-driven trigger and DUNE database groups. He shared in the 2016 Breakthrough Prize in Fundamental Physics with fellow members of the T2K collaboration for improving the understanding of neutrino oscillations and in 2019 shared in the European Physical Society High Energy and Particle Physics prize with his fellow DZero collaborators for work leading to an improved understanding of the top quark.