Observing the Invisible: Neutrino Detection

Speaker: Norm Buchanan
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4:00PM, Monday; October 5, 2015
Refreshments at 3:45PM
Location: 120 Engineering (Hammond Auditorium)

Abstract:
The study of neutrinos is a major area of interest in particle physics. Currently operating accelerator-driven neutrino experiments (NOvA in the US and T2K in Japan) are providing answers to some of the longstanding questions of how neutrinos mix between themselves and how they interact with matter. The next generation of neutrino experiments, such as the Deep Underground Neutrino Experiment (DUNE), will continue to probe neutrino properties and provide insight into other interesting physics, such as proton decay and supernova bursts.

Neutrinos interact with matter extremely weakly and hence detecting them introduces many interesting challenges. In this talk I will discuss neutrino detection techniques that will be employed by the DUNE far detector. In particular I will focus on the ongoing R&D effort to develop a novel photon detectors for DUNE and what is being planned for detector development over the next several years leading up to the construction and ultimate operation of the DUNE far detector.

Biography
Professor Norm Buchanan received his PhD from the University of Alberta and went on to a postdoctoral position at Florida State University where he worked on the DZero experiment at Fermilab. Since joining the CSU faculty he has been studying neutrino physics as part of the T2K and LBNE/DUNE collaborations, and more recently as part the NOvA collaboration. Prof. Buchanan has been heavily involved in the development of new detector technologies for use in particle physics and has served as the leader of the LBNE/DUNE photon detector project since 2013.