

TEL: 225-578-2261
FAX: 225-578-5855
<http://www.phys.lsu.edu>

202 NICHOLSON HALL
Louisiana State University
Baton Rouge, Louisiana 70803-4001

WEEKLY CALENDAR

February 27–March 2, 2012

DEPARTMENTAL COLLOQUIUM

"Neutrino Mysteries and First Neutrino Oscillation Results from the T2K Experiment"

3:40 PM, March 1, 2012
109 Nicholson Hall

Thomas Kutter
Department of Physics and Astronomy – LSU

Host: Juhan Frank

• *Refreshments served at 3:15 PM in 232 (Library) Nicholson Hall* •

In the past decade neutrino physics has made tremendous progress by measuring neutrino oscillations in various channels. The next major milestone is to better determine the size of the last unknown mixing angle θ_{13} which describes the mixing between the 1st and 3rd generation. Not only is the value of θ_{13} of interest to understand the underlying oscillation physics but its value is also critical for future searches for CP violation in the neutrino sector, that is for an asymmetry between matter and anti-matter in the universe. The T2K (Tokai to Kamioka) project is the first off-axis long baseline neutrino oscillation experiment to measure θ_{13} by looking for the appearance of electron type neutrinos in a beam of muon neutrinos. Data taking of the T2K experiment started in early 2010, neutrino event candidates have been observed and first results have been published. In this presentation I will give an introduction to neutrino physics, describe the setup and performance of the T2K experiment and present first results from our oscillation analysis.

PUBLICATIONS:

1. "Probing Loop Quantum Gravity with Evaporating Black Holes," A. Barrau, T. Cailleteau, X. Cao, J. Diaz-Polo, and J. Grain, Phys. Rev. Lett. 107, 251301 (2011).
2. "Quantum discord for qubit–qubit systems, Sai Vinjanampathy and A.R.P. Rau, J. Phys. A: Math. Theor. 45 (2012) 095303.