



CERN Colloquium

SPEAKER: David Nygren (Lawrence Berkeley National Laboratory)

TITLE: **The Search for Neutrino-less Double-Beta Decay: A Decade of Discovery or Despair?**

DATE: Thu 07/04/2011 16:30

PLACE: Council Chamber

ABSTRACT

The search for "neutrino-less double-bete decay" decay in candidate nuclear isotopes remains a central focus in contemporary particle physics, with the main goal of establishing whether the neutrino is its own anti-particle. A positive detection would also establish the presence of lepton number violation in this decay, and suggest the existence of processes beyond the Standard Model and reach of terrestrial accelerators. With the discovery and quantitative assessment of neutrino flavor oscillation, guaranteeing the presence of a non-zero neutrino mass – a requirement for "neutrino-less double-bete decay" decay to occur – motivation has surged. In a review of the present diverse and vigorous current experimental situation, I must focus on just a few approaches and candidate isotopes, in particular on ^{136}Xe and a new experimental effort, NEXT, exploiting the unfamiliar phenomenon of electroluminescence. But, even if the neutrino is its own anti-particle, experiments may see no decays! Still, the high physical significance of a positive result makes the quest attractive, perhaps even irresistible.

Organised by: Ignatios ANTONIADIS /PH-TH & Jack
STEINBERGER/ PH.....Tea & coffee will be
served at 16:00