

LNGS SEMINAR SERIES

Nancy Wandkowsky
Karlsruhe Institute of Technology

The absolute neutrino mass scale and the KATRIN experiment

Although there is cast iron evidence for a massive neutrino, obtained through the observation of neutrino oscillations, the absolute neutrino mass scale is yet unknown. Different approaches are pursued to fix this parameter, which is of importance for particle physics and cosmology. In contrast to the investigations of neutrinoless double beta decay and cosmological observations, single beta decay experiments allow for a direct, model-independent access to the neutrino mass scale. The next generation large-scale tritium β -decay experiment KATRIN (Karlsruhe Tritium Neutrino experiment) is designed to determine m_{ν_e} with a sensitivity of 200 meV/c² (90% C.L.). It is currently being assembled at the Karlsruhe Institute of Technology, with a planned start of tritium operation in 2015. The seminar covers an overview of the different approaches to the absolute neutrino mass scale, focusing on the KATRIN experiment. An introduction to the working principle of KATRIN as well as an insight into the current experimental status, focusing on the topic of radon-induced background processes, will be given.

NOVEMBER 21, 2013 – 2:30 PM
LNGS - " B. PONTECORVO " ROOM