Area Seminar

Title	Deformed Shell Model results for double ? decay
Date and Time	19/05/2011 16:00:00
Speaker	Prof. Rankanidhi Sahu Physics Department, Berhampur University
Area	Theoretical Physics
Venue	Room No. 469
Abstract	Double-? decay is a rare weak-interaction process in which two identical nucleons inside the nucleus undergo decay with or without the emission of neutrinos. Two-neutrino double beta decay is fully consistent with the standard model and has been observed in more than 10 nuclei. On the other hand the neutrino less double beta decay which involves emission of two electrons and no neutrinos has not been observed experimentally and violates lepton-number conservation. For the description of double beta decay, one should have a good nuclear structure model for reliably calculating the nuclear transition matrix elements. In the last several years. we have been using the Deformed Shell Model based on Hartree-Fock states to study the spectroscopic properties of the nuclei in the mass 80 region with considerable success. We have successfully described energy spectra, electromagnetic transition probabilities, large ground state deformation, co-existence of shapes, band crossing in many nuclei in this region. In this talk, I will discuss the application of the model to two neutrino double beta decay in 76Ge and 82Se and positron double beta decay in 78Kr, 74Se and 84Sr. In addition, I will present some preliminary results for zero-neutrino double beta decay of 76Ge.