



ID de Contribution: 14

Type: Oral contribution

Lifetime plunger measurement of low-lying states in ^{133}Ce

We propose a plunger measurement to determine the lifetimes of low-lying states in ^{133}Ce using the $^{116}\text{Cd}(^{22}\text{Ne}, 5n)^{133}\text{Ce}$ reaction and the AGATA+OUPS setup. The ^{133}Ce nucleus has been recently studied with Gammasphere. Several chiral bands and multiple triaxial rotational bands have been identified at high spins. From the same Gammasphere experiment a new, well populated band has been identified at low spins, which is a good candidate for transverse wobbling motion. We recall that very recently a transverse wobbling band has been identified in the odd-proton nucleus ^{135}Pr , in which a proton particle is coupled to a triaxial core. This opened new horizons for the understanding of the low-spin rotational excitations in nuclei, revealing that the wobbling motion also exists in normal-deformed lanthanides. The new band of ^{133}Ce can be the first example of transverse wobbling in an odd-neutron nucleus in which a neutron hole is coupled to a triaxial core. However, to support such an interpretation precise lifetime measurements are necessary, to allow to disentangle between alternative interpretations. The deduced $B(E2; I \rightarrow I-2)_{\text{out}}$ and $B(M1; I \rightarrow I-1)_{\text{out}}$ will be compared with realistic QRPA calculations including the newly introduced additional interaction which couples the wobbling mode to the scissors mode. Lifetimes will be also obtained for low-lying states in ^{133}La , an odd-proton isotone of ^{135}Pr which is candidate for transverse wobbling, and for the even-even neighboring nuclei $^{132}/^{134}\text{Ce}$.

Author: Prof. PETRACHE, Costel (CSNSM, CNRS/IN2P3, Université Paris-Sud, Orsay, France)

Co-auteurs: Dr ASTIER, Alain (CSNSM Orsay); KORICHI, Amel (CSNSM-IN2P3/CNRS); Prof. ATAC-NYBERG, Ayse (KTH, Stockholm, Sweden); Prof. CEDERWALL, Bo (KTH Royal Institute of Technology); Mme MICHELAGNOLI, Caterina (GANIL); Prof. ANDREOIU, Corina (Simon Fraser University); M. RALET, Damian (TU-Darmstadt); Dr CLEMENT, Emmanuel (CNRS GANIL); Dr DE FRANCE, Gilles (GANIL/IN2P3/CNRS); Dr PORE, Jennifer (Simon Fraser University); Dr LJUNGVALL, Joa (CSNSM/IN2P3/CNRS); Dr GUO, Song (CSNSM, CNRS/IN2P3, Orsay, France); Dr KONSTANTINOPOULOS, Theodoros (CSNSM, CNRS/IN2P3, Orsay, France); Dr JACOBSSON, Ulrika (KTH, Stockholm, Sweden)

Orateur: Prof. PETRACHE, Costel (CSNSM, CNRS/IN2P3, Université Paris-Sud, Orsay, France)