



ID de Contribution: 417

Type: Poster

Fission properties of N=100 isotones ^{176}Os , ^{177}Ir and ^{179}Au

Fission properties of nuclear matter in the new region of asymmetric fission were investigated using fusion-fission reactions $^{35}\text{Cl} + ^{141}\text{Pr} \rightarrow ^{176}\text{Os}_{100}$, $^{35}\text{Cl} + ^{142}\text{Nd} \rightarrow ^{177}\text{Ir}_{100}$ and $^{35}\text{Cl} + ^{144}\text{Sm} \rightarrow ^{179}\text{Au}_{100}$, in the excitation energy interval 40-70 MeV. The studied fission fragment mass distributions (FFMDs) and total kinetic energy (TKE) distributions show deviations from a pure Gaussian distribution indicating the coexistence of both symmetric and asymmetric modes. Fission mode parameters extracted from the FFMDs indicate $A_L \sim 80$ and $A_H \sim A_{CN} - A_L$ as fragments hosting the asymmetric mode in the studied nuclei, which is in agreement with the $Z=34$ and $N=46$ deformed shells predicted by theory. In contrast to actinides, the symmetric and asymmetric fission modes exhibit very close average TKE which signifies virtually identical scission-point elongations. The width of FFMDs of Os-Hg is analyzed at comparable nuclear temperature and angular momentum, revealing an inverse parabolic shape with atomic number which paves way for border assessment for the new region of asymmetric fission.

Affiliation de l'auteur principal

LP2i Bordeaux, CNRS/IN2P3-Université de Bordeaux

Auteurs principaux: Mlle KATTIKAT MELCOM, Deby Treasa (LP2i Bordeaux, CNRS/IN2P3-Université de Bordeaux); Prof. TSEKHANOVICH, I. (LP2i Bordeaux, CNRS/IN2P3-Université de Bordeaux)

Co-auteurs: Prof. ANDREYEV, A. N. (School of Physics, Engineering and Technology, University of York); Dr IVANYUK, F. A. (Institute for Nuclear Research, Kiev); Dr MAKII, H. (Advanced Science Research Center, Japan Atomic Energy Agency); Dr HIROSE, K. (Advanced Science Research Center, Japan Atomic Energy Agency); Dr MAZUREK, K. (Nuclear Physics Polish Academy of Sciences, Krakow); Dr NISHIO, K. (Advanced Science Research Center, Japan Atomic Energy Agency); Dr MATHIEU, L. (LP2i Bordeaux, CNRS/IN2P3-Université de Bordeaux); Dr MARINI, P. (LP2i Bordeaux, CNRS/IN2P3-Université de Bordeaux); Dr ORLANDI, R. (Advanced Science Research Center, Japan Atomic Energy Agency); Prof. CZAJKOWSKI, S. (LP2i Bordeaux, CNRS/IN2P3-Université de Bordeaux)

Orateur: Mlle KATTIKAT MELCOM, Deby Treasa (LP2i Bordeaux, CNRS/IN2P3-Université de Bordeaux)

Classification de Session: Session Poster 2: MC1, MC4, MC8, MC10, MC12, MC14, MC20, MC21, MC23, MC24, MC25, REDP

Classification de thématique: MC1 Dernières avancées dans la détection et la modélisation de la fission nucléaire