

Prompt gamma ray-spectroscopy of N=50 fission fragments

Studies in the region around ^{78}Ni are essential to test the interactions used in shell-model calculations to see if any new physics manifests itself far from stability. It's necessary to investigate the structure of nuclei in the A=80-90 regions via prompt gamma-ray spectroscopy, following the proton induced fission of thick ^{238}U target, using the Jurogam II array located in Jyväskylä in Finland. The aim of this part of experiment is to investigate particle-particle nuclei outside the presumed doubly magic nucleus ^{78}Ni , to see if can be used as an inert core and to gain information on single-particle energies which are poorly known. The new results obtained in three nuclei located around the N=50 gap shell: ^{84}Se , ^{83}As and ^{88}Br will be reported. To assign spin and parity values, a systematic study of N=50 isotones and shell-model calculations have been performed. Some interactions are in agreement with experimental results for yrast states at low spin. At higher energy particle-hole core excitations appear and these are outside the valence space used. Thus, more sophisticated interactions are required.

Primary author: Ms DROUET, FLORIANE (LPSC (Laboratoire Physique Subatomique et de Cosmologie))

Co-authors: Mr HERZAN, Andrej (JYFL); Dr LOPEZ-MARTENS, Araceli (CSNSM/JYFL); Dr VANCRAEYEN-EST, Aurélie (Laboratoire de Physique Subatomique et de Cosmologie); Dr SCHOLEY, Catherine (JYFL); Dr SAGE, Christophe (LPSC); Dr THIAMOVA, Gabriela (LPSC); Dr SIMPSON, Gary (LPSC); Dr KESSEDJIAN, Grégoire (LPSC); Mr GEY, Guillaume (LPSC); Dr SAREN, Jan (JYFL); Dr UUSITALO, Juha (JYFL); Dr HAUSCHILD, Karl (CSNSM/JYFL); Dr SANDZELIUS, Mikael (JYFL); Prof. RAMDHANE, Mourad (LPSC); Mr RUOTSALAINEN, Panu (JYFL); Dr RAHKILA, Panu (JYFL); Prof. GREENLEES, Paul (JYFL); Mr PEURA, Pauli (JYFL); Dr JONES, Pete (University of Jyväskylä); Prof. JULIN, Rauno (Department of Physics, University of Jyväskylä); Dr JUUTINEN, Sakari (JYFL); Dr RINTA-ANTILA, Sami (JYFL); Dr KETELHUT, Steffen (Department of Physics, University of Jyväskylä); Dr MALKIEWICZ, Tomasz (LPSC/CSC); Dr GRAHN, Tuomas (University of Jyväskylä); Mrs JAKOBSSON, Ulrika (JYFL); Dr SORRI, juha (JYFL)

Presenter: Ms DROUET, FLORIANE (LPSC (Laboratoire Physique Subatomique et de Cosmologie))