

# Gamma spectroscopy of even-even Ytterbium isotopes

M. Efstathiou<sup>1</sup>, A. Karadimas<sup>1</sup>, A. Zyriliou<sup>1</sup>, P. Vasileiou<sup>1</sup>, T.J. Mertzimekis<sup>1</sup>,  
A. Chalil<sup>1,\*</sup>, S. Pelonis<sup>1,†</sup>, L. Stan<sup>2</sup>, A. Turturica<sup>2</sup>, C. Costache<sup>2</sup>, R. Mihai<sup>2</sup>, R. Borcea<sup>2</sup>,  
S. Ujeniuc<sup>2</sup>, S. Toma<sup>2</sup>, C. Clisu<sup>2</sup>, A. Oprea<sup>2</sup>, A. Ionescu<sup>2</sup>, I. Gheorghe<sup>2</sup>, M. Boromiza<sup>2</sup>,  
C. Mihai<sup>2</sup>, C. Sotty<sup>2</sup>, C. Nita<sup>2</sup>, N. Marginean<sup>2</sup>, R. Marginean<sup>2</sup>, N. Florea<sup>2</sup>, I. Dinescu<sup>2</sup>,  
D. Bucurescu<sup>2</sup>, D. Filipescu<sup>2</sup>, R. Lica<sup>2</sup>, L. Stroe<sup>2</sup>, R. Suvaila<sup>2</sup>

<sup>1</sup>Department of Physics, National and Kapodistrian University of Athens, GR-15784, Greece

<sup>2</sup>Horia Hulubei National Institute of Physics and Nuclear Engineering, R-077125, Romania

presenting author: marga19993@gmail.com

The even-even Ytterbium ( ${}_{70}\text{Yb}$ ) isotopes in the rare-earth region are well deformed nuclei exhibiting rotational properties [1,2]. As the neutron number increases, spectroscopic information becomes scarce preventing our understanding of phenomena related to nuclear structure, such as shape coexistence, which has been predicted to exist in this mass region of the nuclear chart [3]. In this work the population of excited states were investigated in the even-even Yb isotopes via the 2n-transfer reaction  ${}^{168-174}\text{Yb}({}^{18}\text{O}, {}^{16}\text{O}){}^{170-176}\text{Yb}$ .

The measurements were carried out at the 9 MV Tandem accelerator at the Horia Hulubei National Institute of Physics and Nuclear Engineering (IFIN-HH) in Romania. The target was made of natural Yb, irradiated at four different beam energies, i.e. 69, 72, 73 and 74 MeV. Gamma rays and charged particles were detected by the ROSPHERE [4] and SORCERER [5] arrays, respectively. This combination enabled the study of p- $\gamma$  and p- $\gamma$ - $\gamma$  coincident events. Angular distributions were reconstructed using data recorded from 15 HPGe detectors mounted in three rings at angles 37°, 90° and 143°, respectively. The deduced gamma-ray angular distributions in the ground state bands are found to correspond with  $E2$  transitions, as expected.

## References

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\* Present address: IRFU, CEA, Université Paris-Saclay, FR-91190, Paris, France

† Present address: IKS, KU Leuven, Celestijnenlaan 200d, 3001 Leuven, Belgium