

Decay-out of the SD band in ^{190}Hg *

S. Siem^{1,2}, A. Korichi¹, K. Hauskild¹, A. Lopez-Martens¹, F. Hannachi³, A. N. Wilson⁴,
T. Lauritsen⁵, C. Schück¹, Ch. Vieu¹, A. Astier¹, S. Chemel⁶, A. Görge⁷, H. Hübel⁶,
D. Rossbach⁶, G. Schönwasser⁶, M. Bergström⁸, B. M. Nyako⁹, J. Timar⁹, D. Bazzacco¹⁰,
S. Lunardi¹⁰, C. Rossi-Alvarez¹⁰, N. Kintz¹¹, S. Naguleswaran¹¹, P. Bednarczyk¹¹,
D. M. Cullen¹³, J. Sharpey-Schafer¹⁴, R. Wadsworth¹⁵

¹ CSNSM, bat 104,91406 Orsay, France.

² University of Oslo, 0316 Oslo, Norway.

³ CEN Bordeaux-Gradignan, 33175 Gradignan, France.

⁴ Australian National University, Canberra, ACT 0200, Australia.

⁵ Argonne National Laboratory, Argonne, Illinois 60439.

⁶ University of Bonn, D-53115, Germany.

⁷ CEA Saclay, 91191 Gif-sur-Yvette, France.

⁸ Niels Bohr Institute, DK-2100 Copenhagen O, Denmark.

⁹ Institute of Nuclear Research, 51, H-4001 Debrecen, Hungary.

¹⁰ INFN, Sezione di Padova, Padova, Italy.

¹¹ IReS, IN2P3-CNRS et universit Louis Pasteur, F-67037 Strasbourg cedex, France.

¹³ Dept. of Physics, University of Liverpool, Liverpool L697ZE, United Kingdom.

¹⁴ National Accelerator Centre, Cape Town, South Africa.

¹⁵ Dept. of Physics, University of York, Heslington, York YO10 5DD, United Kingdom.

A comprehensive understanding of superdeformed (SD) bands requires knowledge of the quantum numbers (spin and parity) and excitation energies of the levels in the second well. In particular, these quantities allow for stringent tests of theoretical orbital assignments and, more importantly, of the ability of theory to correctly calculate shell-correction energies at large deformation. However, although more than 250 SD bands are known, in the mass 150 and 190 region only a few SD bands have their spins and excitation energies determined through one-step linking transitions.

The decay out of the SD band in ^{190}Hg has been investigated using the EUROBALL detector array. Limits on the excitation energies and spins of the yrast superdeformed band have been determined by analyzing the quasicontinuum spectrum connecting superdeformed and normaldeformed states. The results are in good agreement with a lower limit on the excitation energy given by a 1-step linking transition of 2716 keV. Comparing the excitation energy and spin of the SD band in ^{190}Hg with previous results for $^{191,192}\text{Hg}$ we get information on pairing in the SD well. The results are compared with HFB-theory with skyrme interactions and a systematics of experimental and theoretical data on several Hg isotopes is presented

* This work is supported by the Norwegian Research Council.