

Plunger Lifetime Measurements in ^{102}Pd

G. Kalyva, A. Spyrou, M. Axiotis, S. Harissopulos

*Institute of Nuclear Physics, National Centre for Scientific Research “Demokritos”,
153.10 Aghia Paraskevi, Athens, Greece.*

A. Dewald, A. Fitzler, B. Saha, A. Linnemann, O. Möller

Institut für Kernphysik, Universität zu Köln, Zùlpicherstr. 77, 50937 Köln, Germany.

R. Vlastou

National Technical University of Athens, Zographou Campus, 15780 Athens, Greece

D. R. Napoli, N. Marginean, C. Rusu, G. de Angelis

INFN, Laboratori Nazionali di Legnaro, Legnaro, Italy

C. Ur, D. Bazzacco, E. Farnea

Dipartimento di Fisica dell’ Università and INFN, Sezione di Padova, Padova, Italy

D. L. Balabanski

*Dipartimento di Fisica Università degli Studi di Camerino, Camerino, Italy,
and Faculty of Physics, University of Sofia, BG-1164 Sofia, Bulgaria.*

R. Julin

Department of Physics, University of Jyväskylä, POB 35, 40014 Jyväskylä, Finland.

Abstract

Recently, an intense experimental effort has been devoted to the search of empirical proofs of critical-point symmetries in nuclear structure. These symmetries describe shape-phase transitions and provide parameter-free predictions (up to overall scale factors) for excitation spectra and $B(E2)$ values.

This contribution reports on our recent plunger-lifetime measurements in ^{102}Pd carried out at LN-Legnaro by means of the Cologne plunger coupled to the GASP spectrometer and using the $^{92}\text{Zr}(^{13}\text{C},3n)^{102}\text{Pd}$ reaction at 48 MeV. According to the results of our measurements, ^{102}Pd is so far the best known paradigm of the $E(5)$ critical-point symmetry. Plans for further lifetime measurements aiming at searching for nuclei resembling the $Z(5)$ critical-point symmetry proposed recently will also be presented.