

PLPAC meeting 2024-1

Contribution ID : 25

Investigation of two-phonon gamma-vibrational states in ^{164}Er

Monday 22 Apr 2024 at 12:20 (00h15')

PI info :

Somsundar Mukhopadhyay

local collaborator info :

Prof. R. Palit

Collaborators Name :

Pramod Kumar Nayak, Prabhat Kumar Mishra, S. K. Pandit, V. V. Parker, L. S. Danu, V. Kumar, P. V. Patale, A. Kumar, K. Ramachandran, K. Mahata, A. Shrivastava, G. H. Bhat, J. A. Sheikh, S. Frauendorf, U. Garg, A. Chakraborty, Vishal Malik, Piku Dey, Ananya Kundu, A. Sindhu, Shouvik Pal, S. K. Jadhav, B. S. Naidu, A. T. Vazhappily, and R. Palit.

Motivation :

The exotic phenomenon of two-phonon gamma-vibration in deformed nuclei has been a stimulating and extensively discussed theme in nuclear structure research. The Erbium isotopes offer a unique opportunity to experimentally observe such exotic collective excitations, and test alternative theoretical model approaches. Following evidences in ^{166}Er and ^{168}Er , we plan to search this excitation toward the neutron-deficient side in the Er chain of isotopes. The primary nucleus of interest is ^{164}Er in this investigation, which we plan to study using alpha transfer reaction from ^6Li projectile. INGA array, coupled with CPDA and LaBr3 detectors will be used.

Beam time requirement in shifts :

18

Beam :

^6Li (Lithium ion with mass number 6)

Beam Energy :

42-44 MeV

Beam Current :

1-2 pA

Beam Port :

Linac Hall -2 15D

Buncher Required :

No.

Target / Sample Details :

^{162}Dy enriched foil or electro-deposited

Whether the experiment is part of PhD work ? :

Yes

Name of the PhD student and year of registration :

Pramod Kumar Nayak, 2022

Whether the experiment is part of Post-Doc work ? :

No

Name of the Post Doc fellow :

NA

information on the past beamtime at PLF :

A short experiment was done to investigate a different physics case in A~50-60 mass region in November 2022 using an alternate target (^{50}Ti) which did not yield the originally desired outcome. The originally proposed target (^{48}Ca) was unfortunately broken at the beginning of that experiment.

Publication information related to prior work at the PLF :

NA

Primary authors : Dr. MUKHOPADHYAY, Somsundar (Nuclear Physics Division, Bhabha Atomic Research Centre, Mumbai)

Co-authors : Mr. NAYAK, Pramod Kumar (Bhabha Atomic Research Centre, Mumbai) ; Mr. MISHRA, Prabhat Kumar (Bhabha Atomic Research Centre, Mumbai) ; Mr. PANDIT, Sanat (Nuclear Physics Division, Bhabha Atomic Research Centre, Mumbai - 400085, India) ; Dr. PARKAR, Vivek (Bhabha Atomic Research Centre) ; Mr. DANU, Laxman Singh (Bhabha Atomic Research Centre, Mumbai) ; Dr. KUMAR, Vineet (Bhabha Atomic Research Centre) ; Dr. RAMACHANDRAN, K. (Bhabha Atomic Research Centre, Mumbai) ; Mr. PATALE, P. V. (Bhabha Atomic Research Centre, Mumbai) ; Mr. KUMAR, A. (Bhabha Atomic Research Centre) ; Dr. MAHATA, Kripamay (Nuclear Physics Division, BARC, Mumbai) ; Dr. SHRIVASTAVA, Aradhana (Bhabha Atomic Research Centre) ; Dr. BHAT, G. H. (Sri Pratap College, Srinagar) ; Prof. SHEIKH, J. A. (University of Kashmir, Srinagar) ; Prof. FRAUENDORF, S. (University of Notre Dame, USA) ; Prof. GARG, Umesh (University of Notre Dame) ; Dr. CHAKRABORTY, Anagha (Department of Physics, Visva-Bharati University, santiniketan-731235) ; Prof. PALIT, Rudrajyoti (TIFR) ; Mr. MALIK, Vishal (TIFR) ; Mr. DEY, Piku (TIFR, Mumbai) ; Dr. KUNDU, Ananya (TIFR, Mumbai) ; Ms. SINDHU, A. (TIFR, Mumbai) ; Mr. PAL, Shouvik (TIFR, Mumbai) ; Mr. JADHAV, S. K. (TIFR, Mumbai) ; Mr. NAIDU, B. S. (TIFR, Mumbai) ; Mr. VAZHAPPILY, A. T. (TIFR, Mumbai)

Presenter : Dr. MUKHOPADHYAY, Somsundar (Nuclear Physics Division, Bhabha Atomic Research Centre, Mumbai)

Session classification : --not yet classified--

Track classification : --not yet classified--

Type : --not specified--