Contribution ID: **53** Type: **Experimental Nuclear Physics**

High spin spectroscopy of nuclei near A~90

Tuesday, 8 August 2023 15:55 (15 minutes)

Nuclei near shell-closed remain a topic of immense interest in nuclear structure research for investigating different aspects of single particle and collective excitation. We have systematically investigated nuclei in the 90-mass region using Indian National Gamma Array (INGA) [1]. The level schemes of most of the isotopes in this region are dominated by single particle excitations, which provide an excellent testing ground for large-scale shell model calculations [2,3,4,5]. Another aspect in this region is observing a dipole band at the intermediate spin for ^{89}Zr, interpreted as a signature of rotation about the longest axis [6]. The odd-odd nuclei in the mass 90 region are equally interesting because both the odd nucleons span the same Z~40, N~50 subshell space, providing a good testing ground to study the role of proton-neutron residual interaction and its influence on both the single-particle as well as collective motion. The odd-odd nucleus ^{90}Nb, with one proton particle and one neutron hole outside the Z = 40 and N = 50 shells, respectively, can provide us valuable information about the particle-hole interaction at low as well as high-spin states. In-beam gamma-ray spectroscopy of ^{90}Nb was studied using fusion-evaporation reaction ^{65}Cu(^{30}Si, 3n2p) at a beam energy of 120 MeV. I will present our experimental results on the ^{90}Nb nucleus and its comparison with the large-scale shell model calculation.

Acknowledgment:
The author would like to acknowledge the support of the INGA collaboration. This work is supported by the Department of Atomic Energy, Government of India (Project Identification No. RTI 4002), and the Department of Science and Technology, Government of India (Grant No. IR/S2/PF-03/2003-II).

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Presentation type

Oral presentation

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Session Classification: Young Scientist Session III