

## Nuclear Structure Study of Neutron-Rich Odd Xe Nuclei by $\beta$ - $\gamma$ Spectroscopy

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Shape evolution from spherical to deformed nuclear system is being studied to reveal the effect of nuclear interactions as an increase of neutron number in finite quantum many-body system. Neutron-rich odd Xe nuclei with  $A \sim 140$  are located at the northeast transitional-mass region of the doubly-magic  $^{132}\text{Sn}$  ( $Z > 50$  and  $N > 82$ ). Various nuclear structure with prolate collectivity and octupole correlation are expected to appear this mass region, which is also located around  $^{144}\text{Ba}$  ( $N = 88$ ), well known for octupole collective properties.

Neutron-rich Xe nuclei are investigated as a part of EURICA campaign at RIBF, RIKEN, based on  $\beta$ - and isomer-decay spectroscopy. Neutron-rich nuclei with  $A \sim 140$  were produced by in-flight fission of  $^{238}\text{U}$  beam with energy of 345 MeV/nucleon and intensity of  $\sim 5$  pA, bombarding on a 3 mm Be target. The fragments were then separated and identified through BigRIPS separator and ZeroDegree spectrometer. Ion and  $\beta$  ray were detected by WAS3ABi which consists of 5 DSSSD with 60 vertical and 40 horizontal strips. The parent  $\beta$  decaying nucleus was identified by the same detected position of ion and  $\beta$  ray at the WAS3ABi. Gamma ray was detected by using EURICA, a  $\gamma$  ray detector array consisting of 12 cluster-type Ge detectors.

In this work, neutron-rich odd Xe nuclei are investigated by the  $\beta$  decay and the  $\beta$ -delayed neutron decay of I isotopes and the decay schemes were carefully constructed. Nuclear structure in low-lying states in odd Xe nuclei will be discussed.

### Experimental study on nuclear physics

**Primary authors:** M. NOR, Nurhafiza (Dept. of Phys., Osaka Univ.); ODAHARA, A (Dept. of Phys., Osaka Univ.); YAGI, A (Dept. of Phys., Osaka Univ., & RIKEN); LOZEVA, R (IPHC, France & Univ. Paris-Saclay, France); MOON, C.-B (IBS, Korea); NISHIMURA, S (RIKEN); NISHIBATA, H (Dept. of Phys., Osaka Univ. & RIKEN & Dept. of Phys. Kyushu Univ.); DOORNENBAL, P (RIKEN); LORUSSO, G (RIKEN); SUMIKAMA, T (RIKEN); WATANABE, H (Beihang Univ. China); BROWNE, F (Univ. of Brighton, UK & RIKEN); XU, Z. Y (Univ. of Hong Kong, Hong Kong & RIKEN); WU, J (Peking Univ., China & RIKEN); YOKOYAMA, R (CNS, Univ. of Tokyo); ISOBE, T (RIKEN); BABA, H (RIKEN); SAKURAI, H (RIKEN & Dept. of Phys., Univ. of Tokyo); SUZUKI, H (RIKEN); INABE, N (RIKEN); KAMEDA, D (RIKEN); FUKUDA, N (RIKEN); TAKEDA, H (RIKEN); AHN, D. S (RIKEN & IBS, Korea); SHIMIZU, Y (RIKEN); KUBO, T (RIKEN); IIMURA, S (Rikkyo Univ.); FANG, Y (Dept. of Phys., Osaka Univ., & RIKEN); DAIDO, R (Dept. of Phys., Osaka Univ., & RIKEN); ISHIGAKI, T (Dept. of Phys., Osaka Univ., & RIKEN); MORIMOTO, S (Dept. of Phys., Osaka Univ., & RIKEN); IDEGUCHI, E (RCNP, Osaka Univ.); KOMATSUBARA, T (IBS, Korea); NIIKURA, M (RIKEN & Dept. of Phys., Univ. of Tokyo); NISHIZUKA, I (Dept. of Phys., Tohoku Univ.)

**Presenter:** M. NOR, Nurhafiza (Dept. of Phys., Osaka Univ.)

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