Contribution ID: **246** Type: **Poster**

Half-life and β-delayed neutron measurements of neutron-rich nuclei near N=126 at RIBF

Monday 16 September 2024 12:49 (1 minute)

The neutron-rich $N \sim 126$ region is important to r-process calculations and has been less explored by experiments. This region is unique for its strong competition between allowed and first-forbidden transitions [1], which complicates half-life predictions. Besides, the position of the third r-process abundance peak and production of actinides are sensitive to half-lives of $N = 126$ isotones [2,3]. Measurements of more exotic nuclei are essential to verify theoretical models commonly used in r-process calculations.

We will present results from the BRIKEN experiment [4] at RIBF. Particle identification was confirmed by the BigRIPS separator and a silicon energy-loss telescope. On the first attempt by RIBF, half-lives and beta-delayed neutron-emission probabilities (P_n) of $N \sim 126$ exotic isotopes—some never been measured before—were determined by the WAS3ABi beta-counting system [5] and the BRIKEN neutron counter [6]. Preliminary results of $Z \leq 79$ isotopes will be discussed.

References

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Session Classification: Poster Flashes