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New experimental decay information of β -delayed neutron emitters for very exotic neutron-rich nuclei in the north-east of double magic ^{78}Ni region

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New experimental β -decay half-lives, β -delayed neutron emission probabilities (P_{xn}), and γ ray for neutron-rich nuclei in the $A \approx 90$ -100 region are of interest for nuclear structure, industrial applications, and astrophysics. The scarce experimental data in very the neutron-rich regions involved in the r -process nucleosynthesis is the main source of uncertainty of the astrophysical models to better understand the observed abundance distribution, since they rely heavily on theoretical data for yet unmeasured nuclei. The neutrons released during the decays of β -delayed neutron emitters in these regions play an important role in late phases of the r -process during the freeze-out by shifting decaying material to different mass chains and providing additional neutrons for further capture reactions.

Since 2016, the BRIKEN collaboration has investigated several neutron-rich regions between $A=70$ and $A=200$ with the aim of determining properties of hundreds of isotopes with unknown or incomplete decay information that were not accessible before. The experimental setup at the fragmentation RIB facility of RIKEN in Japan consisted of a DSSDs array to register the implanted ions and β -decays, and the BRIKEN neutron counter, which also included two HPGe clover-type γ -ray detectors for high resolution spectroscopy.

In this contribution, I will report the β -decay half-lives, P_{xn} values, and preliminary γ information of neutron-rich Ge, As, Se, and Br nuclei around mass $A \approx 90$, north-east of the doubly-magic ^{78}Ni . The implications of the results in theoretical models and astrophysical simulations will also be discussed.

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