

Abstract Submitted
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Parasitic production of slow RI-beam from a projectile fragment separator by ion guide Laser Ion Source (PALIS) TETSU SONODA, RIKEN, SLOWRI COLLABORATION — The projectile fragment separator BigRIPS of RIBF at RIKEN provides a wide variety of short-lived radioactive isotope (RI) ions without restrictions on their lifetime or chemical properties. A universal slow RI-beam facility (SLOWRI) to decelerate the beams from BigRIPS using an RF-carpet ion guide has been proposed as a principal facility of RIBF. However, beam time at such a modern accelerator facility is always limited and operational costs are high. We therefore propose an additional scheme as a complementary option to SLOWRI to drastically enhance the usability of such an expensive facility. In BigRIPS, a single primary beam produces thousands of isotopes but only one isotope is used for an experiment while the other >99.99% of isotopes are simply dumped in the slits or elsewhere in the fragment separator. We plan to locate a compact gas cell with 1 bar Ar at the slits. The thermalized ions in the cell will be quickly neutralized and transported to the exit by gas flow and resonantly re-ionized by lasers. Such low energy RI-beams will always be provided without any restriction to the main experiment. It will allow us to run parasitic experiments for precision atomic or decay spectroscopy, mass measurements. Furthermore, the resonance ionization in the cell itself can be used for high-sensitive laser spectroscopy, which will expand our knowledge of the ground state property of unstable nuclei.

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