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Updates on experimental reaction studies on radioactive nuclei including astrophysical impacts and solenoidal development at LANSCE

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For better understanding of reaction rates for radioactive isotopes relevant for the nu-p process, we directly measured cross sections of ^{56,59}Ni(n,p), ^{56}Co(n,p), and ^{59}Ni(n,α) using the LENZ (Low Energy NZ) instruments at the Los Alamos Neutron Science Center (LANSCE). I will discuss the impacts of updated experimental reaction rates in the nu-p process nucleosynthesis for the context of answering to heavy element production puzzles. As a continued effort of improving nuclear reaction studies on radionuclides at LANSCE, I will present the progress on the dedicated solenoidal spectrometer for directly measuring neutron induced charged particle reactions with highly radioactive targets. This development is aimed to provide improved precision than the current LENZ instruments for various nuclear application's data needs.

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