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Commissioning the Solenoid Spectrometer for Nuclear Astrophysics and Decays

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The Solenoid Spectrometer for Nuclear Astrophysics and Decays (SSNAPD) is a new silicon-array solenoidal spectrometer system in development at the University of Notre Dame's Nuclear Science Lab (NSL). Using single nucleon transfer and charge exchange reactions in forward kinematics as a production mechanism, SSNAPD will provide sensitive measurements of charged particle partial widths for excited states in near-stability nuclei that exert significant influence on nucleosynthetic pathways in astrophysical explosions. The robust magnetic separation capabilities and high backwards-angle efficiencies of the solenoid spectrometer concept make measurements of the charged particle branching ratio, from which the partial width is determined, nearly background-free and provides a significant improvement in sensitivity to the smallest partial widths that traditional techniques cannot probe. In this talk I will discuss the progress made in the commissioning of SSNAPD, and its integration into the NSL's TriSol facility, with a particular focus on recent off- and on-line experiments that have been performed to verify and optimize the capabilities of various components of the system. Plans for finalizing commissioning, transitioning into scientific measurements, and the future of SSNAPD at the NSL will also be reviewed.

Authors: DEMBSKI, Cade (University of Notre Dame); BARDAYAN, Daniel (University of Notre Dame); O'MALLEY, Patrick (University of Notre Dame)

Co-authors: SIMON, Anna (University of Notre Dame); COUDER, Manoel (University of Notre Dame); AHN, Tan; VON SEEGER, William (University of Notre Dame)

Presenter: DEMBSKI, Cade (University of Notre Dame)

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