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Abstract for an Invited Paper
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Resonant states in proton-rich nuclei for nuclear astrophysics¹

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Our understanding of stellar explosions like novae and X-ray bursts is limited in large part by the dearth of experimental information on resonant states in proton-rich nuclei that govern nuclear reaction rates affecting energy production and nucleosynthesis. The Array for Nuclear Astrophysics Studies with Exotic Nuclei is a charged-particle detector array that is being used to measure (α ,p) and proton scattering reactions to improve our understanding of the nuclear reaction rates important in stellar explosions. Results from the first experiments using ANASEN with beams of radioactive nuclei from the RESOLUT facility at Florida State University will be presented. Plans for experiments with ANASEN at the National Superconducting Cyclotron Laboratory will also be presented, along with the development of the Separator for Capture Reactions (SECAR) that will enable measurements of proton capture reactions using low energy beams of radioactive nuclei.

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