Abstract Submitted
for the DNP15 Meeting of
The American Physical Society

CASPAR - Nuclear Astrophysics Underground FRANK STRIEDER, South Dakota School of Mines and Technology, DANIEL ROBERTSON, MANOEL COUDER, Universiy of Notre Dame, UWE GREIFE, Colorado School of Mines, DOUG WELLS, South Dakota School of Mines and Technology, MICHAEL WIESCHER, Universiy of Notre Dame
— The work of the LUNA Collaboration at the Laboratori Nationali del Gran Sasso demonstrated the research potential of an underground accelerator for the field of nuclear astrophysics. Several key reactions could be studied at LUNA, some directly at the Gamow peak for solar hydrogen burning. The CASPAR (Compact Accelerator System for Performing Astrophysical Research) Collaboration will implement a high intensity 1 MV accelerator at the Sanford Underground Research Facility (SURF) and overcome the current limitation at LUNA. The installation of the accelerator in the recently rehabilitated underground cavity at SURF started in Summer 2015 and first beam should be delivered by the end of the year. This project will primarily focus on the neutron sources for the s-process, e.g. $^{13}C(\alpha,n)^{16}O$ and $^{22}Ne(\alpha,n)^{25}Mg$, and lead to unprecedented measurements compared to previous studies. A detailed overview of the science goals of CASPAR will be presented.

Frank Strieder
South Dakota School of Mines and Technology

Date submitted: 30 Jun 2015 Electronic form version 1.4