Abstract Submitted
for the APR15 Meeting of
The American Physical Society

Advancing Underground Nuclear Astrophysics with CASPAR[1]
DANIEL ROBERTSON, MANOEL COUDER, University of Notre Dame, UWE GREIFE, Colorado School of Mines, FRANK STRIEDER, DOUG WELLS, South Dakota School of Mines and Technology, MICHAEL WIESCHER, University of Notre Dame — The advancement of experimental nuclear astrophysics techniques and the requirement of astrophysical network models for further nuclear data over greater energy ranges, has led to the requirement for the better understanding of nuclear reactions in stellar burning regimes. For those reactions of importance to stellar burning processes and elemental production through stellar nucleosynthesis, the energy range of astrophysical interest is always problematic to probe. As reaction measurements approach the burning window of interest, the rapid drop off in cross-section hampers laboratory investigation. The natural background suppression of underground accelerator facilities enables the extension of current experimental data to lower energies. An example of such reactions of interest are those thought to be sources of neutrons for the s-process, the major production mechanism for elements above the iron peak. The reactions ^{13}C(α,n)^{16}O and ^{22}Ne(α,n)^{25}Mg are the proposed initial focus of the new nuclear astrophysics accelerator laboratory (CASPAR) currently under construction at the Sanford Underground Research Facility, Lead, SD.

[1]With thanks to funding provided by South Dakota Science and Technology Authority and the NSF under grant number PHY-1419765

Daniel Robertson
University of Notre Dame

Date submitted: 09 Jan 2015 Electronic form version 1.4