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CASPAR –Nuclear Astrophysics Underground at SURF

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Fifty years after the first publication of results of the Homestake experiment to detect solar neutrinos, the Sanford Underground Research Facility (SURF) hosts various facilities for astrophysics experiments deep underground in the Homestake mine. The Ross Campus, located at a depth of 4850 ft (4300 m.w.e.), is home to the Compact Accelerator System for Performing Astrophysical Research (CASPAR), which has recently taken up regular operation.

The single-ended accelerator at CASPAR with a terminal voltage of up to 1 MV allows to study proton- and alpha-induced reactions for nuclear astrophysics at higher energies than those previously available in underground experiments. After an initial phase of (p,γ) reaction studies for commissioning and characterization of the machine, the next set of measurements at CASPAR will be dedicated to the study of (α,n) reactions, such as the neutron sources for the astrophysical s-process.

In this poster we will present an overview of CASPAR's commissioning, current status and scientific program.

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