

First Results from the CASPAR Underground Nuclear Astrophysics Facility

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In the ongoing drive to extend the lower-energy limits of cross-section measurements in nuclear astrophysics, new techniques and facilities are required to enter or even approach the burning regime of interest for many astrophysically significant processes. Many unique approaches have been developed to overcome or navigate around the exponentially decreasing reaction probability at low energy extremes. As current laboratory experiments fight to reach this stellar burning window, the rapid reaction decrease drives the need for higher intensity accelerators, more robust and isotopically enriched target material and lower background interference. The natural background suppression of underground accelerator facilities enables the extension of current experimental data to the lower energies needed. New facilities around the world are coming on-line with a view to capitalizing on underground cosmic-ray suppression, each offering their own unique techniques and capabilities. CASPAR is the first underground nuclear astrophysics laboratory in the United States and first measurements and results will be given.

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