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DIANA - An Underground Accelerator Facility for Nuclear Astrophysics

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Measuring nuclear reactions of astrophysical interest at *stellar* energies is usually a daunting task because the cross sections are very small and background rates can be comparatively large. Often, cosmic-ray interactions set the limit on experimental sensitivity, but can be reduced to an insignificant level by placing an accelerator underground – as has been demonstrated by the LUNA accelerators in the Gran Sasso underground laboratory. The Dual Ion Accelerator facility for Nuclear Astrophysics (DIANA) is a proposed next-generation underground accelerator facility, which would be constructed at the 4850 ft level of the Homestake Mine in Lead, SD. This talk will describe DIANA and the questions in nuclear astrophysics that can be explored at such a laboratory.

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