

## Underground nuclear astrophysics experiments: Status and Future

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The goal of nuclear astrophysics is to measure cross sections of nuclear physics reactions of interest in astrophysics and to evaluate reaction rates for improvement knowledge of stellar evolution and synthesis of elements. At typical temperatures of stellar cores, the energy region of interest, the so-called Gamow window, is of the order of hundred keV and cross sections are very low due to the suppression of the Coulomb barrier. When these processes are studied in surface laboratories, cosmic ray induced background can strongly hamper the determination of reaction cross sections at energies relevant to astrophysical processes and experimental setups should be arranged in order to improve the signal-to-noise ratio. Placing experiments in underground sites, however, reduces this background opening the way towards ultra low cross section determination. LUNA (Laboratory for Underground Nuclear Astrophysics) was pioneer in this sense. Two accelerators are actually mounted at the INFN National Laboratories of Gran Sasso (LNGS) allowing to study nuclear reactions in several stellar scenario. Forefront Underground nuclear astrophysics projects include CASPAR and JUNA experiments, installed in Sanford Underground Research Facility (SURF) and in China Jinping Underground Laboratory (CJPL), respectively.

Recent results and future perspectives at Underground experiments will be described in this talk.

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