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LUNA: from Sun to Novae and beyond

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LUNA started underground nuclear astrophysics more than twenty years ago in Gran Sasso. The 1400 meter thick overburden of dolomite has allowed nuclear physics experiments with very small count rate, down to a few events per month.

Thanks to this, the key reactions of the proton-proton chain and of the CNO cycle have been studied down to very low energies. As a consequence, it is now possible to use solar neutrinos to study the properties of the neutrino itself and to probe the deep interior of the Sun. The solar phase ended a few years ago. LUNA is now studying the reactions responsible for the 'cooking' of the light elements during hydrogen burning in the shell of massive stars and in Novae explosions.

The main results obtained by LUNA will be discussed and future developments towards the study of helium burning briefly outlined.

Primary author: BROGGINI, Carlo (INFN-Sezione di Padova)

Presenter: BROGGINI, Carlo (INFN-Sezione di Padova)

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