

Gamma, neutron and muon background in the new Felsenkeller underground accelerator laboratory

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Astrophysically relevant nuclear reactions between charged particles usually occurring in stars at deep sub-Coulomb energies. A direct experimental study of such reactions in the laboratory requires high luminosity coupled with low background in the detectors to compensate for the tiny reaction yield to be measured.

The new Felsenkeller underground accelerator laboratory is equipped with a high current particle accelerator and has very low background.

This contribution will report about the experimental study of the muon flux and angular distribution of the muons in the new laboratory, which is required to optimize the veto detector arrangements. In addition, the measured neutron flux and energy spectrum at Felsenkeller will be reported. Finally, the actual γ background in muon vetoed HPGe detectors will be presented. The measured background and known ion beam current will allow the study many astrophysically relevant reactions direct in their stellar energy range.