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The SABRE Proof of Principle

Wednesday, 5 June 2019 17:00 (23 minutes)

SABRE (Sodium-iodide with Active Background REjection) is a direct dark matter search experiment aiming to measure the annual modulation of the dark matter interaction rate with NaI(Tl) crystals. A modulation with very high statistical significance (12.9σ) has been measured by the DAMA experiment at Laboratori Nazionali del Gran Sasso using the same target material.
Results from several other experiments with different sensitive materials seem to exclude the interpretation of the DAMA signal as due to dark matter nuclear scattering whithin the standard hypothesis. However, a model independent comparison of the results of the existing experiments is not possible and so it is very important to carry out a new measurement using NaI(Tl) crystals in order to confirm or refute the DAMA claim.
The SABRE experiment focuses on the achievement of an ultra-low background rate by means of high-purity crystals operated inside a liquid scintillator veto for active background rejection. In addition, twin detectors will be located in the northern and southern hemispheres to disentangle any possible contribution to the modulation from seasonal or site-related effects.
This talk will provide an overview on the SABRE initial Proof-of-Principle phase (PoP) at LNGS, designed to assess the radio-purity of the crystals as well as the efficiency of the liquid scintillator veto and the overall background level.

Collaboration name

SABRE

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