



Dipartimento di Fisica
Università di Cagliari
INFN, Sezione di Cagliari



HIGH ENERGY PHYSICS COLLOQUIA

23 novembre 2016 · ore 15:00 · aula C

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Canfranc & Laboratori Nazionali del Gran Sasso

SABRE: LOW BACKGROUND NaI(Tl) DETECTOR FOR DIRECT DARK MATTER SEARCH

Abstract

DAMA/LIBRA has provided a clear annual modulation signal with high statistical significance by operating a high-purity NaI(Tl) array at the Gran Sasso Laboratory. This longstanding experimental finding provides a model independent signature for an hypothetical dark matter particle interacting in the target mass. In addition, the DAMA/LIBRA finding is in agreement with the WIMPs dark matter scenario. However, the WIMPs interpretation of the DAMA/LIBRA modulation is strongly in conflict with other experimental results. SABRE is an attempt to probe the DAMA/LIBRA signal with a high purity NaI(Tl) scintillator. SABRE will consist of two identical detectors: one at the Gran Sasso Laboratory and a second at the SUPL Laboratory in Australia. A proof-of-principle is being installed at Gran Sasso to characterize the radio-purity of the crystal, which is a crucial parameter. Other experimental efforts (ANAIS, COSINE) are underway for the same physics case. Details on the physics case and on the SABRE program will be given in the talk.

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