

XVth Quark Confinement and the Hadron Spectrum



Contribution ID: 103

Type: Oral

Optical calibration of SABRE-South veto photomultiplier tubes

Tuesday 20 August 2024 16:40 (20 minutes)

The SABRE experiment aims to provide a definitive answer on the nature of the purported dark matter annual modulation signal from the DAMA/LIBRA experiments. Their 12.9% measurement remains incompatible with null results of other dark matter experiments. By relying on ultra-pure NaI(Tl) crystals and dual hemisphere locations, the SABRE experiment will provide a model independent test.

SABRE's two detector setup, one in the Northern Hemisphere (LNGS, Italy) and one in the Southern Hemisphere (SUPL, Australia), provides a robust method to account for seasonal effects which might be insufficiently understood.

In the SABRE-South experiment the NaI(Tl) crystals are submerged in a veto vessel containing 10 tonnes of liquid scintillator. This vessel is instrumented with 18 photomultiplier tubes (PMTs) to efficiently detect and reject background events.

PMTs should be meticulously calibrated to achieve optimal veto efficiency and monitor the optical properties of the liquid scintillator over time.

This talk focuses on the ongoing optical calibration of veto PMTs and their performance as a whole of the veto system as well as their independent characteristics.

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Session Classification: Strongly-Coupled Theories and Dark Matter

Track Classification: G: Strongly-Coupled Theories and Dark Matter