

Status of the SABRE South Experiment at the Stawell Underground Physics Laboratory

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The SABRE (Sodium iodide with Active Background REjection) experiments aim to detect an annual rate modulation from dark matter interactions in ultra-high purity NaI(Tl) crystals. The SABRE South experiment is located at the Stawell Underground Physics Laboratory (SUPL), Australia, and is the first deep underground laboratory in the Southern Hemisphere, due to be completed in late 2021.

SABRE South is designed to disentangle seasonal or site-related effects from the dark matter-like modulated signal first observed by DAMA/LIBRA and is a partner to the SABRE North effort at the Laboratori Nazionali del Gran Sasso (LNGS).

SABRE South is instrumented with ultra-high purity NaI(Tl) crystals immersed in a liquid scintillator veto further surrounded by passive steel and polyethylene shielding and a plastic scintillator muon veto. This experiment is currently under construction and will be commissioned from late 2021 to early 2022. We will present the status of SABRE South, its expected background, and its sensitivity to a DAMA/LIBRA like modulation. We will also present recent NaI(Tl) crystal quenching factor measurements performed at the Heavy Ion Accelerator Facility, and a report on the status of SUPL.

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Dark matter

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