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The SABRE North project at Gran Sasso Laboratory

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The SABRE experiment aims to deploy arrays of ultra-low-background NaI(Tl) crystals to carry out a model-independent search for dark matter through the annual modulation signature. SABRE will be a double-site experiment, consisting of two separate detectors in the two terrestrial hemispheres.
The SABRE North detector will be installed underground at LNGS and will deploy an array of 9 ultra-high radio-purity NaI(Tl) detectors (5 kg mass each) in a Cu and PE passive shielding.
The expected background rate in the ROI [1,6] keV is of order 0.5 dru. To this end SABRE North will make use of zone refining purification of the NaI powder. The collaboration has recently confirmed by means of several tests the technology to produce 5 kg size NaI(Tl) crystals after zone refining purification. This is a breakthrough in the production of ultra-high radio-purity NaI(Tl) scintillators. Based on this development SABRE North is starting crystal production. The first crystal after zone refining is expected to be produced and delivered to LNGS in 2025 for characterization.
Results from zone refining runs and crystal growth development will be reported.

Collaboration you are representing

SABRE North

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Session Classification: Dark Matter and Its Detection

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