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Status and prospect of GRANDE

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The Global Rare Anomalous Nuclear Decay Experiment (GRANDE) aims to push the frontiers of nuclear and particle physics by investigating rare nuclear decay processes. A key focus of GRANDE is the measurement of extremely rare nuclear transitions and the search for exotic dark matter particles, including axion-like particles, anapole dark matter, and dark photons in nuclear transitions. Based on the extremely rare electron-capture decay branching of isotopes such as ^{57}Co, ^{139}Ce, and ^{44}Ti.

The Source-as-Detector technique was chosen for radiation detection by embedding a radioactive source within a $CeBr_3$ crystal scintillator. We present the fabrication process and scintillation performance of $CeBr_3$:^{139}Ce and $CeBr_3$:^{57}Co, 4π BGO veto system and shielding setup at the Yemilab with a 1000-m-rock overburden. The first experimental run was performed with $CeBr_3$:^{139}Ce at a data acquisition rate of 20 kHz. We present the analysis of 1010 recorded events, including a preliminary branching ratio limit for the missing 65.86 keV M1 gamma transition of ^{139}Ce, which could be indicative of axion-like particle signatures.

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