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NU-CLEUS: Exploring coherent neutrino-nucleus scattering with cryogenic detectors

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The detection of coherent-neutrino nucleus scattering (CEvNS) opens the door for new physics within and beyond the Standard Model of Particle Physics. NU-CLEUS is a novel neutrino experiment at a nuclear power reactor which allows for precision measurements with a novel cryogenic gram-scale detector design based on CRESST technology. A recent prototype detector has achieved an ultra-low energy threshold of 20eV for nuclear recoils, one order of magnitude lower than previous devices. The NU-CLEUS experimental concept contains a fiducial-volume cryogenic detector concept, which is expected to significantly reduce backgrounds. The NU-CLEUS experiment aims to operate at close distance to a power reactor; a promising site at the CHOOZ power plant in France is currently being investigated. In this talk we present in detail the cryogenic detector technology of NU-CLEUS and report about the strategy of the new experiment which has recently been fully funded.

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