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Neutrinoless double beta decay with SNO+ FREIJA DESCAMPS, Lawrence Berkeley National Lab, SNO+ COLLABORATION — The SNO+ experiment is the successor to the Sudbury Neutrino Observatory (SNO), in which SNO's heavy water is replaced by approximately 780 T of liquid scintillator (LAB). The combination of the 2 km underground location, the use of ultra-clean materials and the high light-yield of the liquid scintillator means that a low background level and a low energy threshold can be achieved. This creates a new multipurpose neutrino detector with the potential to address a diverse set of physics goals, including the detection of reactor, solar, geo- and supernova neutrinos. A main physics goal of SNO+ is the search for neutrinoless double beta decay. By loading the liquid scintillator with 0.3% of natural Tellurium, resulting in about 800 kg of ^{130}Te (isotopic abundance is slightly over 34 %), a competitive sensitivity to the effective neutrino mass can be reached. This talk will present the status of the SNO+ detector, and then discuss the plans and goals of the double beta decay phase.

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