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The SNO+ Experiment: status and future prospects

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Summary

The SNO+ Experiment, successor of the Sudbury Neutrino Observatory (SNO) and located in the SNOLAB underground laboratory in Canada, is a multi-purpose loaded scintillator neutrino experiment which first aim is to detect the neutrinoless double beta decay process in Te-130. The detection of such a rare nuclear decay will imply physics beyond the standard model and can prove the nature, as well as the mass hierarchy, of the neutrino. Due to the expected low rate of the decay, the experiment needs to avoid any possible contamination entangling the expected signal. Placing it underground, reduce the possible radioactive contamination during its installation and applying background reduction techniques is mandatory.
The experiment is divided in three phases: filling the sensitive volume with water, scintillator and Te loaded scintillator phase. In each phase different physics can be studied, although its main focus will be during the Te loaded scintillator phase. In this talk the status of the experiment, which expects to start taking data with water in June 2016, will be presented. Special attention will be given to the recently new loading technique developed by the collaboration to dissolve the Te into the organic scintillator (LAB). Furthermore, the expected sensitivity and background model will be discussed, showing the competitiveness of the experiment in the field.

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