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Title: The DARWIN Experiment: Status, Design and Science reach

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The DARWIN (Dark Matter WImp Search with Noble Liquids) experiment is a proposed next-generation dark matter search experiment that aims to achieve unprecedented sensitivity to weakly interacting massive particles (WIMPs), one of the leading candidates for dark matter. The experiment will use a multi-ton scale liquid xenon time projection chamber (TPC) to detect the rare interactions of WIMPs with atomic nuclei.

In this talk, we will present the design and plans for the DARWIN experiment, including its detector technology, background reduction techniques, and expected sensitivity. The DARWIN experiment will employ advanced techniques in detector calibration and background modeling to achieve an unprecedented background level and a sensitivity to WIMP-nucleon cross sections down to the neutrino-nucleus background at WIMP masses above $50 \text{ GeV}/c^2$.

We will also discuss the status of the DARWIN project, including its international collaboration, current R&D efforts, and future timeline. We will present XLZD, a new consortium with the LZ collaboration, aiming at a combined experiment.

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Classification de Session: Direct Dark Matter - session 2, Chair Sara Diglio