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5.5 MeV Solar Axion Search with DEAP-3600

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DEAP-3600 is a liquid argon (LAr) based spin-independent direct dark matter search experiment. It is designed to detect nuclear recoils induced by the elastic scattering of weakly interacting massive particles (WIMPs) on argon nuclei. In addition, its large target mass and excellent ability to distinguish between electronic and nuclear recoils makes it well-suited for the detection of 5.5 MeV solar axions, which would produce electronic recoils in the LAr, at higher energy than most backgrounds. In this talk I will discuss the various components of the 5.5 MeV solar axion search analysis, including the calibration of the energy response function on AmBe neutron calibration data, development of the Monte Carlo based background and signal models, the algorithm developed to fit the MC model to the data, the methods used to evaluate the sources of uncertainty, and the approach that will be used to calculate the final result. The projected sensitivity for various axion interaction channels will also be shown.

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