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## DEAP-3600 Dark Matter Experiment Stability and $^{39}\text{Ar}$ Decay Analysis

*Tuesday, 15 February 2022 10:48 (12 minutes)*

DEAP-3600 is a single-phase dark matter experiment searching for the direct detection of the dark matter signal using 3279 kg of liquid argon as the target material. In addition to the elastic interaction of the dark matter candidate, a Weakly Interacting Massive Particle (WIMP), with the argon nuclei, theories also predict the modulation in this signal rate with time due to the motion of the earth around the sun. The signals from the backgrounds in the experiment are not expected to show this modulation with time. The observation of this type of modulation signal will extend the sensitivity of the WIMP search in the experiment. To obtain this sensitivity limit, a complete detailed understanding of detector systematics is required. The study of the event rates with time also compliments many physics analyses such as  $^{39}\text{Ar}$  dating which will give a precise measurement for the lifetime of this isotope. The detector stability parameters in the DEAP-3600 data show the excellent stability of the detector over time which makes it ideal for these studies. In this talk, the stability of the DEAP-3600 detector will be presented with some preliminary measurements for the  $^{39}\text{Ar}$  lifetime analysis.

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### Please select: Experiment or Theory

Experiment

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