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## Direct Detection Constraints on Super Heavy Dark Matter Using DEAP-3600 Detector

*Wednesday, 16 February 2022 10:24 (12 minutes)*

The DEAP-3600 experiment (Dark matter Experiment using Argon Pulseshape discrimination) at SNOLAB in Sudbury, Ontario is searching for dark matter via the elastic scattering of argon nuclei by dark matter particles as they traverse through the detector. The detector uses 255 photomultiplier tubes (PMTs) looking at ~3300kg of liquid argon in a spherical vessel. In addition to being sensitive to weakly interacting massive particles (WIMPs), DEAP-3600 is also sensitive to super-heavy dark matter candidates with masses up to the Planck scale.

In this talk, we present the search for this candidate particle in three years of data (using a blind analysis), looking for multiple-scatter signals. No signal events were observed leading to direct detection constraints for dark matter masses between 8.3e6 and 1.2e19 GeV and dark matter-nucleon cross-section between 1e-23 and 2.4e-18 cm<sup>2</sup> (first direct detection constraints on Planck-scale mass dark matter).

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### **Please select: Experiment or Theory**

Experiment

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**Session Classification:** Dark Matter Searches