

Dark Matter Search with the DEAP-3600 experiment

Saturday, July 7, 2018 12:00 PM (15 minutes)

DEAP-3600 is a single-phase liquid argon (LAr) dark matter direct detection experiment sensitive to spin-independent scattering of Weakly Interacting Massive Particles (WIMPs) on nucleons. The experiment is located two kilometres underground at SNOLAB, in Canada, with a sensitivity of 10^{-46} cm² for a spin-independent WIMP-nucleon cross section at 100 GeV/c² WIMP mass for a background-free exposure of 3 tonne-year. The LAr is contained in an acrylic vessel (85 cm radius) viewed by 255 HQE 8 inches Hamamatsu PMTs, separated by 50 cm acrylic light guides. The detector was designed and built to reach a background level of less than 0.6 events in 3 tonne-year exposure. DEAP-3600 has been taking physics data since late 2016 and first results were recently published which demonstrated stable detector operations and the power of pulse shape discrimination to distinguish electron recoil backgrounds from nuclear recoils, leading to the most sensitive WIMP search to date using a LAr target. Results from the current analysis and future plans will be presented in this talk.

Primary author: Dr VÁZQUEZ-JÁUREGUI, Eric (Instituto de Física UNAM)

Co-author: COLLABORATION, DEAP

Presenter: Dr VÁZQUEZ-JÁUREGUI, Eric (Instituto de Física UNAM)

Session Classification: Dark Matter Detection

Track Classification: Dark Matter Detection