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Search for galactic dark matter and CEvNS in reactors with liquid argon

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DEAP-3600 is a WIMP dark matter direct-detection experiment located deep underground at SNOLAB near Sudbury in Canada, which uses liquid argon as target material. This experiment has set the most stringent limits in argon. A recent study was developed using a Non-Relativistic Effective Field Theory (NREFT) to consider other dark matter-nucleon interactions. The research includes some specific interactions and isospin-violating scenarios, where world-leading limits were achieved for some model parameters. This study also analyzed the modification of the exclusion limits due to potential substructures in the local dark matter halo, motivated by the observations of stellar distributions from the Gaia satellite and other astronomical surveys.

The Scintillating Bubble Chamber (SBC) is a new technology under development ideal for both GeV-mass WIMP searches and CEvNS detection at reactor sites. A 10-kg bubble chamber using liquid argon with the potential to reach and maintain sub-keV energy thresholds is currently under construction. This detector will combine the event-by-event energy resolution of a liquid noble scintillation detector with the world-leading electron-recoil discrimination capability of the bubble chamber.

Recent results from DEAP-3600 and the status of the SBC-10kg will be presented in this talk.

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