

Searching for Dark Matter with Dark Side experiment

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The precise nature of approximately 85 % of the matter in our Universe, or 27 % of its mass-energy content, still remains a mystery, only witnessed by plenty of indirect evidences such as galaxy's rotation velocities or gravitational lensing. Several theories, from the famous MOND theory to the existence of a new kind of particles passing through primordial black holes theory, have candidates explaining this hidden mass, the so-called Dark Matter.

Part of the The Global Argon Dark Matter Collaboration, the Dark Side experiment, based on an Argon double phase time projection chamber, is looking for dark matter particle candidates, and more particularly to WIMPs (Weakly Interacting Massive Particles) and axion-like particles, two of the particle main candidates.

After few years of data taking with a 50 kilos detector who achieved some of the best world limits on WIMPs-neutron cross-section, especially at low mass, the detector is upgrading to a 50 tons detector to gain sensitivity and be able to reach even lower cross-sections. In the meantime, two prototypes are in progress, they have taken data and would be taken more data this year. Both their rigorous calibration and data reconstruction is of primordial importance for further WIMP searches with the next generation detector.

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