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## The DarkSide Experiment - Physics of Direct Dark Matter Detection

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There is now strong astrophysical evidence that the majority of the mass in the universe is comprised of an as yet unidentified form of non-baryonic matter. This matter does not interact via the electromagnetic force nor the strong force and is non-relativistic. Predicted by supersymmetric models and possessing all of the required properties, WIMPS (Weakly Interacting Massive Particles) form a promising candidate for this 'dark matter.' Despite the lack of electromagnetic or strong interactions, WIMPS should occasionally elastically recoil off atomic nuclei, and it is these recoils which liquid noble gas detectors are ideally suited to detect. In this talk, I will discuss the physics of liquid noble gas detectors, as well as sources of background in WIMP searches and methods of their suppression, with a particular emphasis on the techniques employed by the DarkSide program at LNGS.

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