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## Depleted Argon for Large Scale Dark Matter Searches

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Dark matter searches through the limit provided by neutrino-induced nuclear recoils will require background-free exposures of several hundreds of tonnes per year. With its powerful power of rejection of beta/gamma background in favor of the selection of nuclear recoil and low internal background, depleted argon is the ideal target for this endeavor.

On the heels of the successful procurement of 150 kg of ultra-low background underground argon, the DarkSide Collaboration has developed a program for large scale collection of underground argon and its further abatement by active isotopic depletion. I will described status and progress of our effort. I will also describe its impact on DarkSide-20k, a 30 tonne depleted argon detector proposed for installation at LNGS and design to perform a dark matter search with a background-free search 100 tonne\*year exposure.

### Summary

**Presenter(s)** : Prof. FIORILLO, Giuliana (Universita degli studi di Napoli "Federico II" and INFN Napoli)

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