

The Global Argon Dark Matter Collaboration

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The LAr technology has strong potential to push the sensitivity for WIMP detection several orders of magnitude beyond current levels. The Global Argon Dark Matter Collaboration (GADMC) will pursue a sequence of future detectors to follow this potential. The immediate objective is the DarkSide-20k two-phase detector, currently under construction at LNGS. DarkSide-20k will have ultra-low backgrounds and sensitivity to WIMP-nucleon cross sections down to $1.2 \times 10^{-47} \text{ cm}^2$ for WIMPs of $1 \text{ TeV}/c^2$ mass with a LAr exposure of 100 t yr . In parallel to DarkSide-20k there will be a detector of the order of 1 t in mass, DarkSide-LowMass, also installed at LNGS and specifically optimized for the observation of the electroluminescence signal below $10 \text{ GeV}/c^2$. This dedicated search will have excellent discovery capability, reaching the so-called neutrino floor in the low-mass search region. A subsequent objective will be the construction of the ARGO detector which will achieve a LAr exposure of 1000 t yr to push the sensitivity to the neutrino floor region for high mass WIMPs. The combination of the three experiments will cover the WIMP hypothesis down to the neutrino floor for masses from $1 \text{ GeV}/c^2$ to several hundreds of TeV/c^2 .

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