## DarkSide-20k and the Direct Dark Matter Search with Liquid Argon

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Dual-phase noble liquid Time Projection Chambers (TPCs) and single-phase scintillation-only detectors offer competitive ways to search for dark matter directly via elastically scattering off of detector target nuclei and electrons. Argon possesses an intrinsic property allowing for powerful discrimination between electron (background) and nuclear (signal) recoils. The Global Argon Dark Matter Collaboration (GADMC) has undertaken an ambitious program from the extraction and purification of Underground Argon (UAr), depleted in <sup>39</sup>Ar reducing the radioactive background, to the development of large arrays of Silicon Photo Multiplier (SiPM) modules capable of resolving single photoelectrons. DarkSide-20k (dual-phase TPC) is the next stage of this program, and it has entered the construction phase at the Gran Sasso underground laboratory (LNGS) in central Italy. An exposure goal of  $\approx$  200 tonne-years with near-zero instrumental background has been set for sensitivity to a WIMP-nucleon cross section of  $\approx 10^{-47}$  cm<sup>2</sup> for a WIMP mass of 1 TeV/c<sup>2</sup> over a 10-year run. An overview of the DarkSide-20k experimental program, along with recent UAr cryogenic system testing results and other progress will be presented.

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