

# Development of DarkSide-20k Time Projection Chamber

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The liquid argon (LAr) detector technology has strong potential to push the sensitivity for WIMP detection several orders of magnitude beyond current levels. The Global Argon Dark Matter Collaboration includes scientists from all the major groups currently working with this technology with the goal to build a sequence of future detectors that maximally exploit the advantages of LAr as a detector target. The immediate objective is the DarkSide-20k two-phase detector with a fiducial mass of 20 t of LAr, currently in construction at the Gran Sasso laboratory. DarkSide-20k will have ultra-low backgrounds, with the ability to measure its backgrounds in situ, and sensitivity to WIMP-nucleon cross sections down to  $7.4 \times 10^{-48} \text{ cm}^2$  for WIMPs of  $1 \text{ TeV}/c^2$  mass in an exposure of 200 t yr. The DarkSide-20k Time Projection Chamber (TPC) will utilize several new technologies to achieve the required performance. This talk will discuss the design of the TPC and status of the development.

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