

**RESEARCH****DARK MATTER: DARKSIDE CONFIRMS ARGON'S EFFECTIVENESS**

The DarkSide-50 experiment in operation at the INFN Gran Sasso National Laboratories reported two new results on dark matter studies. DarkSide-50 was designed to detect a specific type of large mass weakly interacting massive particles, WIMPs larger than $50 \text{ GeV}/c^2$. The main difficulty relates to the ability to detect and reject the background noise, which hides the signal. At the end of a data-taking period of 530 days, without any signals detected in the data collected, DarkSide-50 confirmed the outstanding capacity for discrimination of its argon-based technology. This led to the conclusion that the DarkSide technology can distinguish with extreme accuracy between the interactions typical of WIMPs (nuclear recoils) and those caused by natural radioactivity. In addition, a second result about a new analysis of low-energy ionisation events, revealed that DarkSide-50 is also effective in the detection of dark matter particles with a smaller mass (below $10 \text{ GeV}/c^2$). The results, which further confirm the future DarkSide-20k project, were unveiled on 21 February during the 2018 Dark Matter conference held in the United States, at the University of California, Los Angeles (UCLA). ■