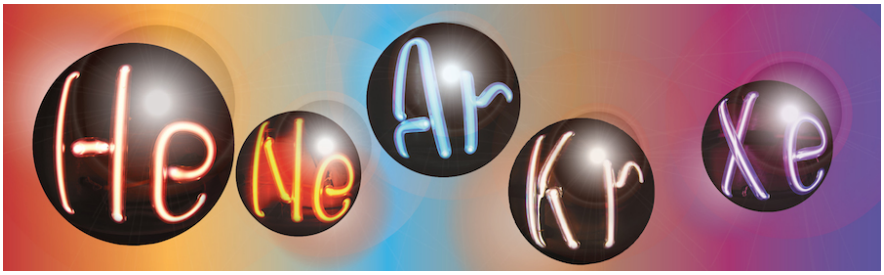

Contribution ID: **45** Type: **Presentation**

A versatile cryogenic system for liquid argon detectors

Friday, 23 September 2022 09:00 (15 minutes)

Detectors for direct dark matter search using noble gases in liquid phases as detection medium need to be coupled to liquifying, purifying and recirculation systems.
In the framework of the DarkSide experiment the Proto-0 system, a double phase liquid Argon TPC as reduced scale prototype version of the DarkSide-20k detector, has been built with the aim of the study of the position of the scintillation and ionization signals detected by a large SiPM's arrays.
The detector is connected to a dedicated cryogenic system to liquefy and purify the gaseous argon used as the scintillator.
The cryogenic system is mainly composed of double wall cryostat hosting the TPC, a purification stage to reduce the impurities below the parts per billion level, a condenser to liquefy the argon, a recirculation gas panel connected to the TPC cryostat equipped with a custom gas pump.
The system has been built and has been operated at the INFN-Laboratory of the Naples since October 2021.
Main features of the cryogenic system will be presented. Performances, long term operations and stability in terms of the most relevant thermodynamic parameters will be reported. Future plans and upgrades will be discussed.

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