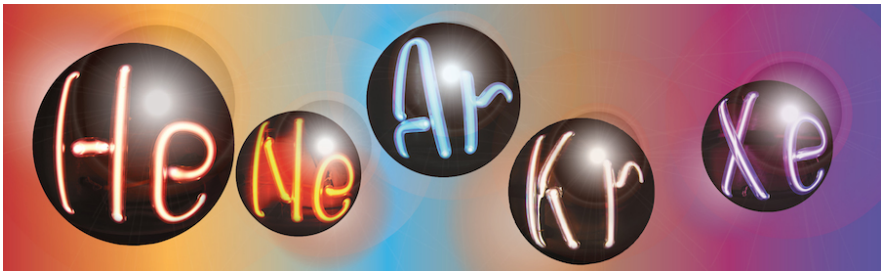

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SiPM array of Xenoscope, a full-scale DARWIN vertical demonstrator

Friday, 23 September 2022 12:00 (15 minutes)

The DARWIN project aims to build and operate a next-generation observatory for dark matter and neutrino physics, featuring a time projection chamber (TPC) with a proposed active target of 40 t of liquid xenon (LXe). As an R&D facility to test fundamental components of the future detector, Xenoscope, a full-scale vertical demonstrator with 350 kg of LXe and up to 2.6 m electron drift length was built at the University of Zurich. Its main objective is to demonstrate electron drift over unprecedented distances in LXe, first in a purity monitor setup with charge readout, followed by a dual-phase TPC. In this second phase, an array of 192 VUV-sensitive 6x6 mm2 SiPMs (Hamamatsu VUV4 MMPCs) with a 12-channel readout will be placed above the active target and operated as light readout for the proportional scintillation signals in the TPC.
This talk will present the design and development of the SiPM top array of Xenoscope, from the structural and electronic design, up to the characterization of the SiPM sensors, their installation and performance.

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