

Xenoscope — a full-scale vertical demonstrator for the DARWIN observatory

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The DARWIN observatory is a proposed next-generation experiment to search for particle dark matter and other rare interactions. It will operate a 50 t liquid xenon detector, with 40 t in the time projection chamber (TPC). To inform the final detector design and technical choices, a series of technological questions must first be addressed. I will describe a full-scale demonstrator in the vertical dimension, Xenoscope, which was constructed at the University of Zurich. The main goal is to achieve electron drift over a 2.6 m distance, which is the scale of the DARWIN TPC. Other applications of the facility include R&D on the high voltage feedthrough, measurements of electron cloud diffusion, as well as measurements of optical properties of liquid xenon. Xenoscope is also available as a test platform for the DARWIN collaboration to characterise new detector technologies.

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