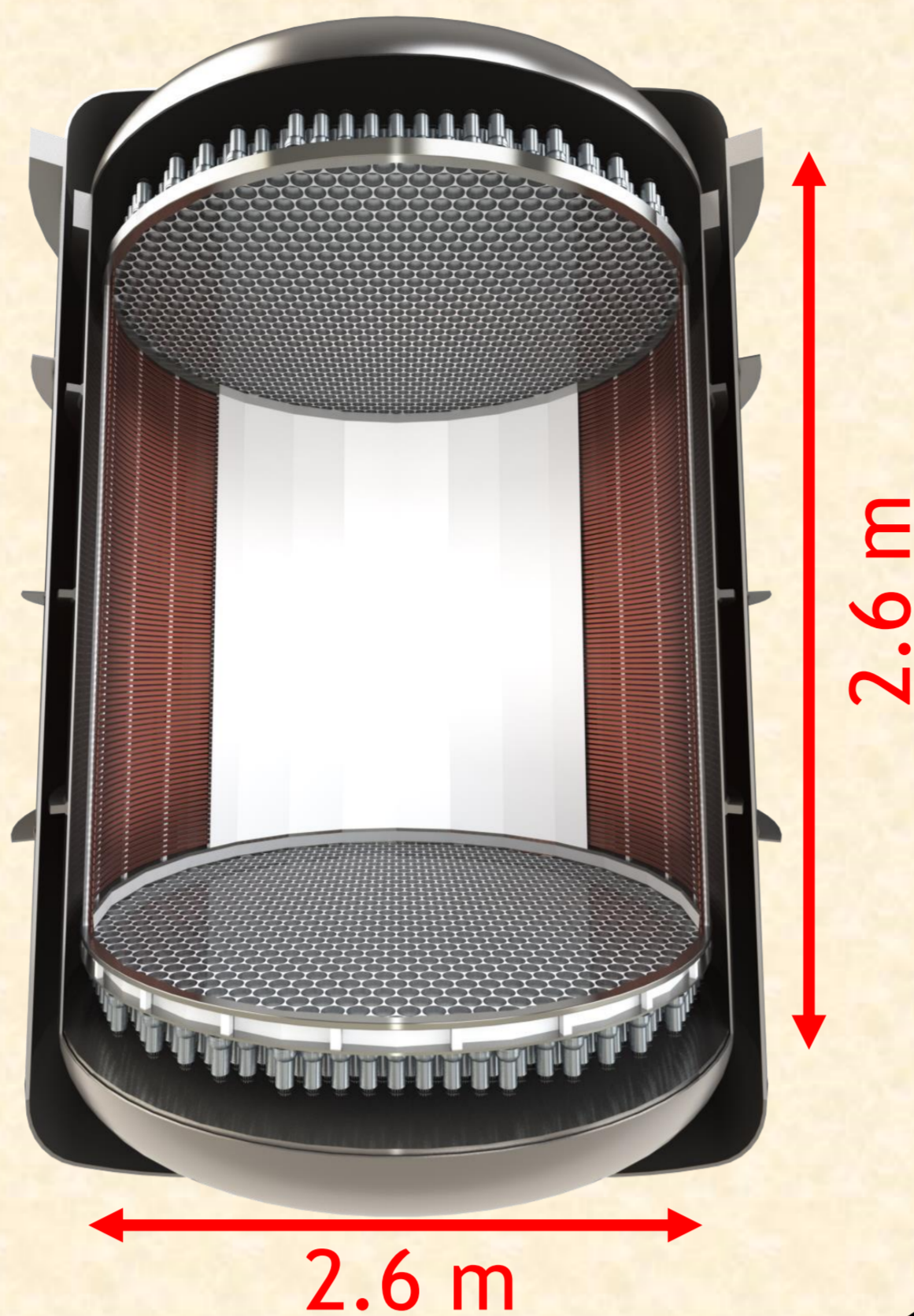


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Introduction

The DARWIN dark matter detector is set to be the largest Liquid Xenon (LXe) Time Projection Chamber (TPC) ever built. To perform R&D towards DARWIN, the collaboration proposed to build two Demonstrators: a short, 2.75 m diameter detector at the University of Freiburg, and a 2.6 m tall detector at the University of Zürich.

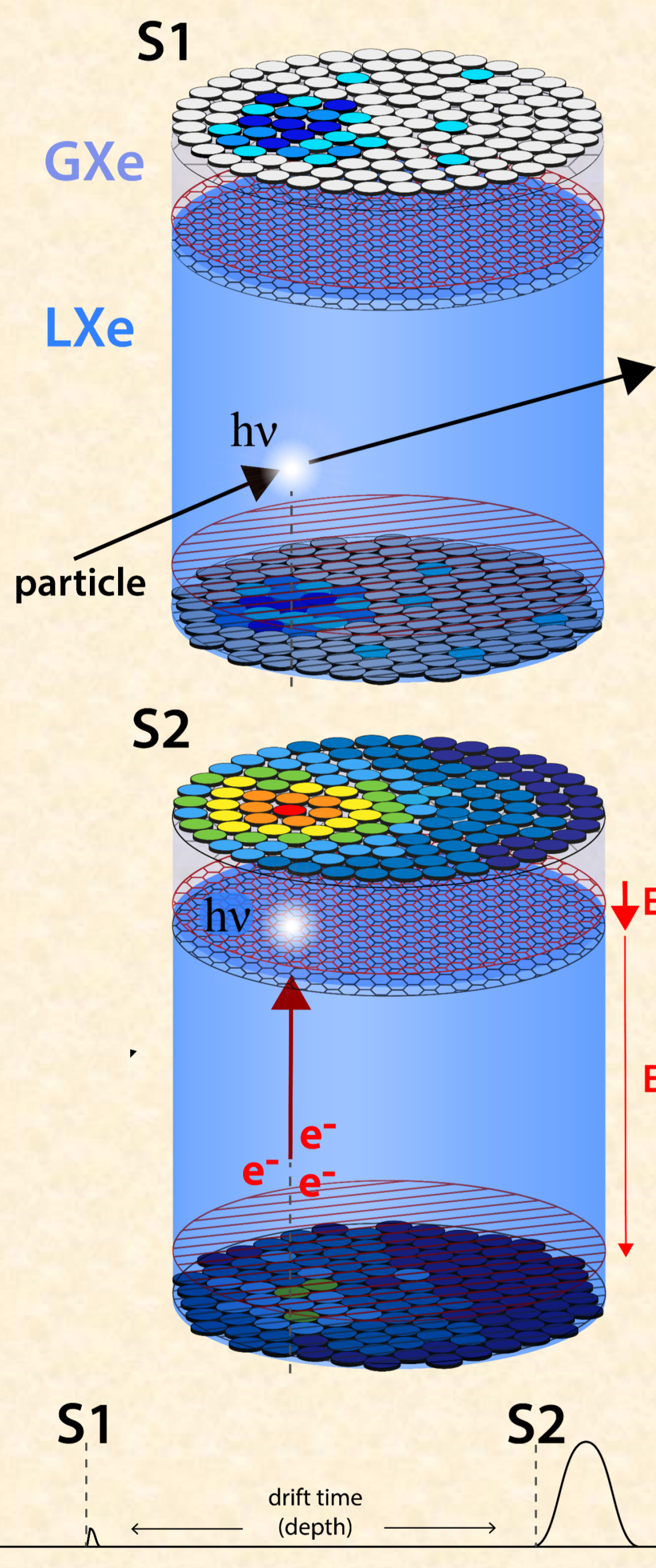
DARWIN - 50 ton LXe



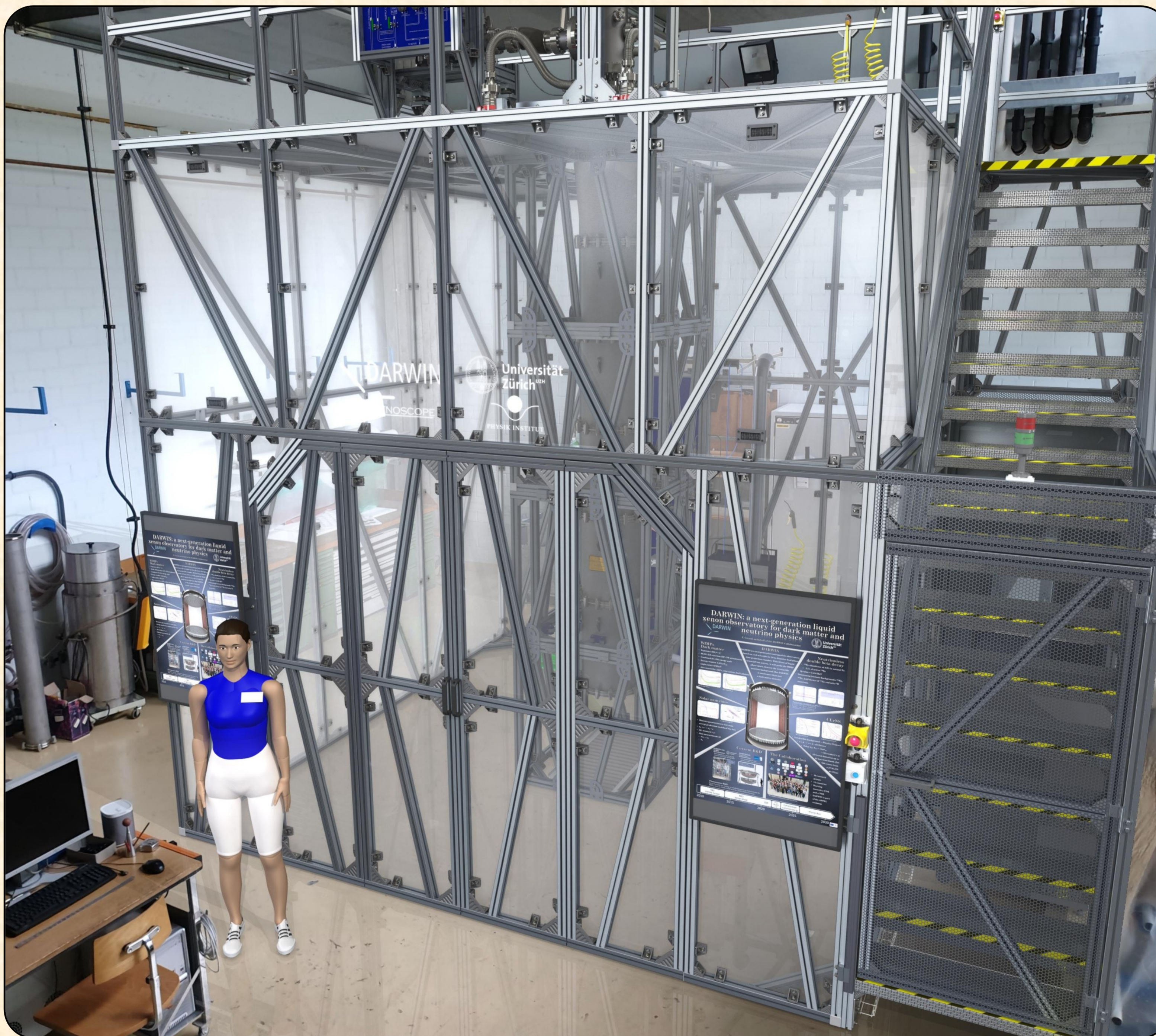
Goals of the 2.6 m tall Demonstrator

- Demonstrate 2.6 m electron drift
- Investigate the high-voltage requirements for drift and extraction of electrons in the gas phase
- Determine the recirculation speed and purification rate needed for DARWIN

Dual-Phase TPC Principle

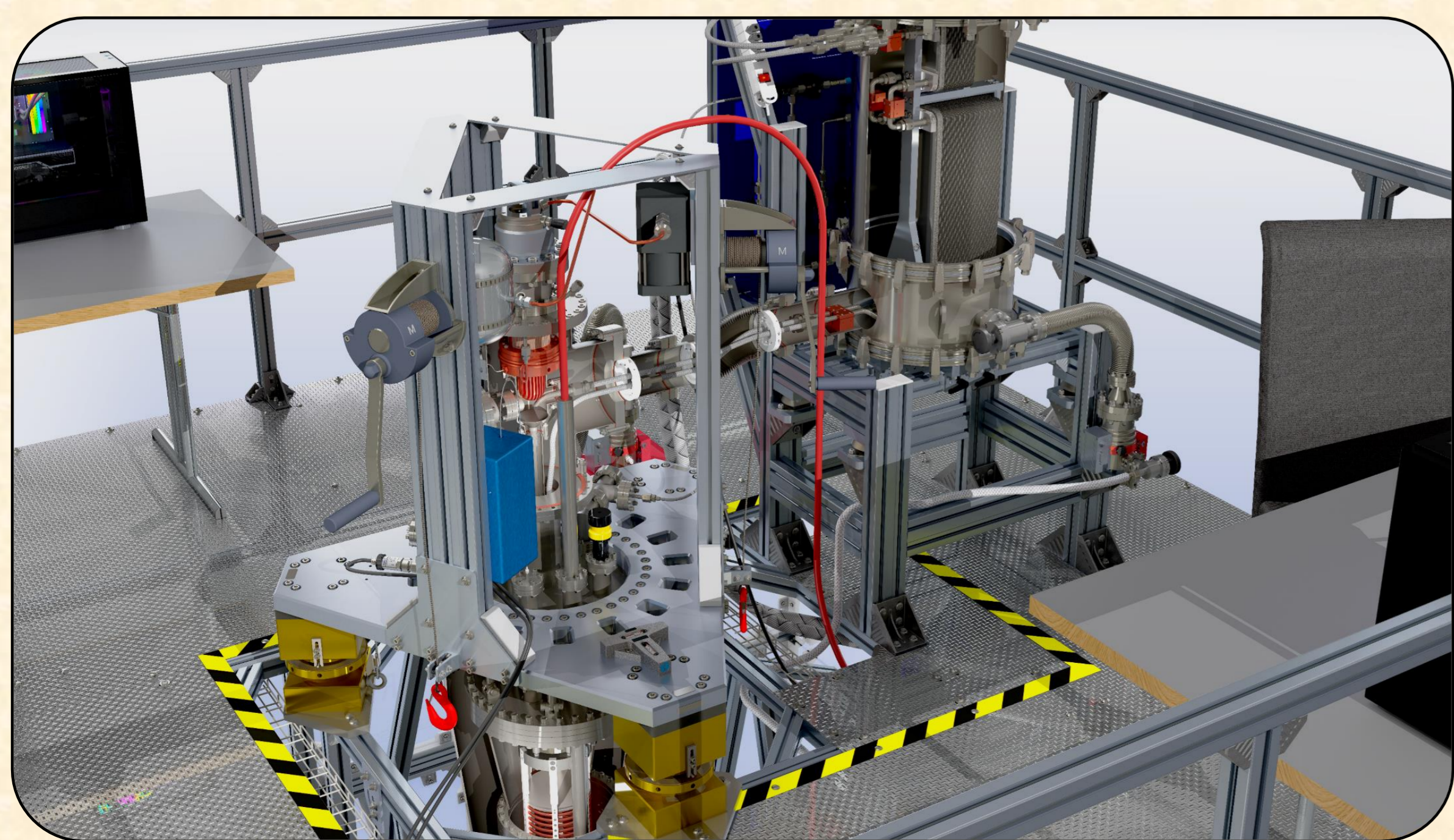


Demonstrator Facility



Inner Components

- Stainless steel outer and inner vessels
- Cooling unit: Pulse Tube Refrigerator (PTR)
- Top flange with feedthroughs for instrumentation, cabling, high voltage supply, etc.



Gas System

- Xe transfer (Fill, Recuperation)
- Injection of calibration sources
- Purification of GXe
- Max target recirculation flow: 100 SLPM
- Pneumatic valves for remote operation
- PLC-based slow control for operation and monitoring of all detector systems

