

# The progress of ALETHEIA, a low-mass DM direct detection project with liquid helium-filled TPCs

*Thursday 27 March 2025 16:20 (15 minutes)*

ALETHEIA, standing for A Liquid hElium Time projection cHambEr In dArk matter, is a newly established direct detection project aiming to search for low-mass DM with liquid helium-filled time projection chambers (TPCs). The project was officially launched in 2020 and has made significant progress since then. In this talk, I will mainly demonstrate that a single-phase liquid helium (LHe) TPC is technologically viable; moreover, I will slightly discuss some of the challenges in building a dual-phase LHe TPC and the preliminary solutions.

**Author:** LIAO, Junhui

**Presenter:** LIAO, Junhui

**Session Classification:** SESSION 19: Direct detection: Ultra-Light DM (Axions, ALPs, WISPs) searches