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WP4: Quantum Science and Technology

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Work Package 4 (WP4)
Quantum science and technology

O4.1: Advance Understanding of Quantum Foundations through R&I

Conduct cutting-edge research to explore fundamental issues in quantum mechanics…

INSTITUTIONS: INFN-LNF (LEAD), Adelaide, SNOLAB, CNRS

O4.2: Develop and test quantum sensors for dark matter detection

Drive innovation by designing and deploying quantum superconducting circuits and low-background detectors to search for low-mass dark matter…

INSTITUTIONS: INFN-LNGS (LEAD), Adelaide, and SNOLAB

O4.3: Mitigate environmental noise in quantum technologies

Through collaborative R&I, identify and mitigate environmental noise sources…

INSTITUTIONS: LNGS, SNOLAB (LEAD)

O4.4: Promote training and knowledge transfer through secondments and integration

Facilitate secondments across partner institutions, offering interdisciplinary training opportunities in quantum science …

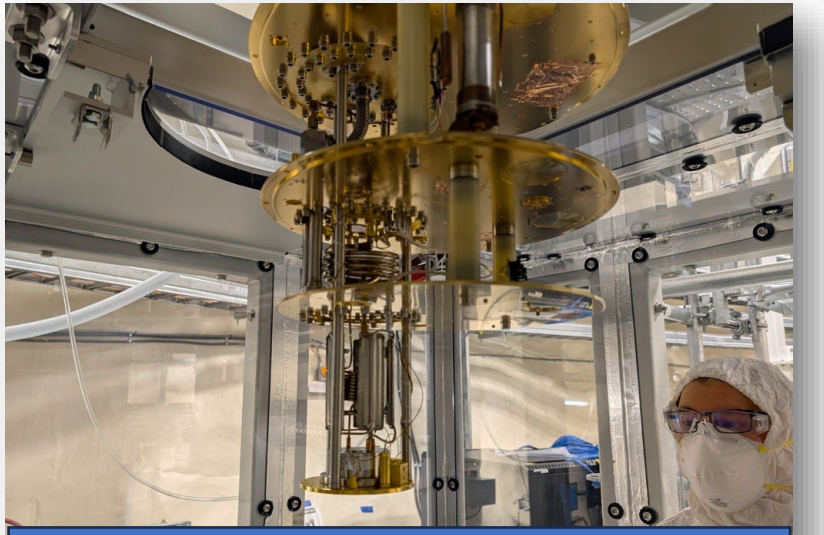
INSTITUTIONS: SNOLAB, Adelaide, INFN, CNRS – operated collaboratively

Readiness for Collaboration

Cryogenic Underground Test (CUTE) facility

CUTE main system components:

Payload
Cryostat
Magnetic shielding
Water tank
Drywell
Deck
Low activity lead
Very low activity lead
Internal lead
Polyethylene
Suspension system
Extra frame for Pulse Tube (PT)/turbo
Gamma source
Neutron source



Qubits installed and operating underground in CUTE

SuperCDMS has entered operations

We look forward to working with colleagues to organize secondments of key quantum science program staff at LNGS and to host experts at SNOLAB to facilitate knowledge transfer, development, and human engagement in these efforts.