

2026/09/16

Report from SNOLAB

Jodi Cooley

Executive Director | SNOLAB

Professor of Physics | Queen's University



Introduction to SNOLAB



- SNOLAB hosts rare event searches and measurements.
- 2 km underground (Vale Creighton Mine near Sudbury, Ontario, Canada)
 - 5,000 m² class 2000 cleanroom
- >1250 users from 186 institutions in 28 countries
- Experiments supported by CFI-IF, NSERC, and international partners.



Visionary Partners



Science Strategy



Increase our understanding of the particles and forces that have shaped the universe.

- What is the nature of dark matter?
- What is the nature of the neutrino?

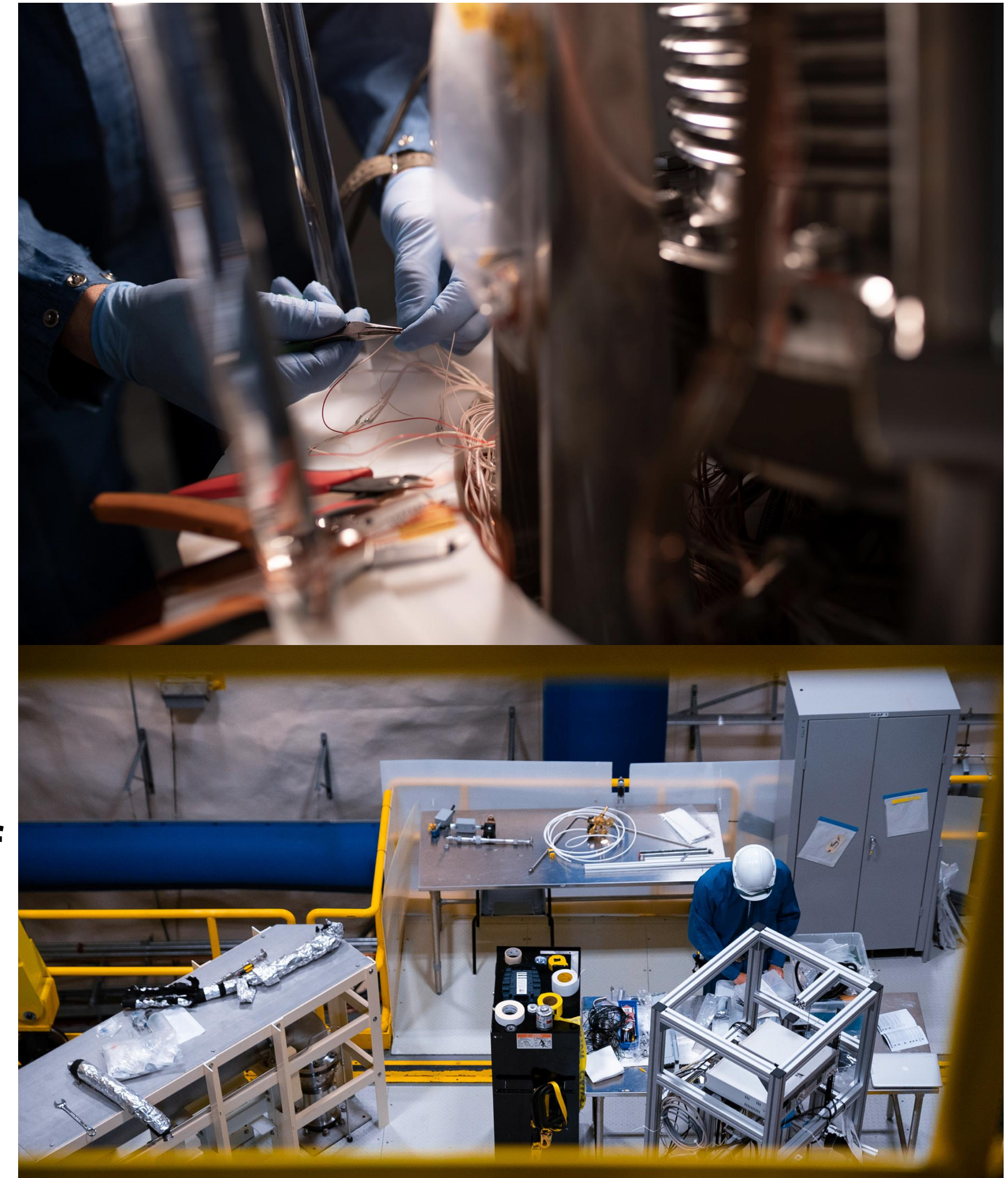
Continue to collaborate in scientific research requiring deep underground facilities.

- Neutrino observatories (solar, supernovae, geo, reactor, etc.)
- Effects of radiation on biological systems
- Environmental monitoring (nuclear non-proliferation, etc.)

Pursue new collaborations and opportunities in emerging areas of underground science

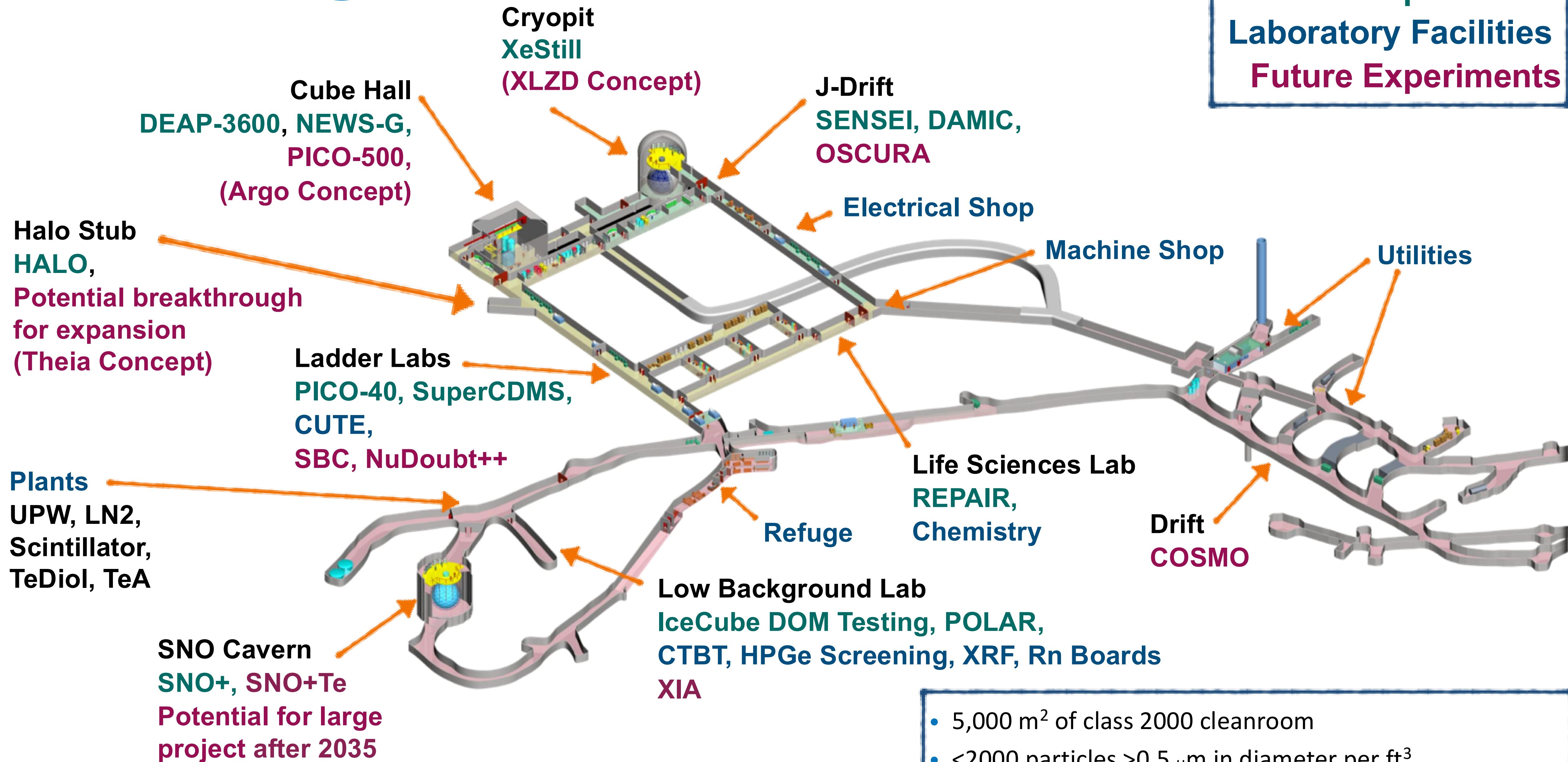
- Quantum technologies (quantum computers, sensors, and materials)

Become an intellectual hub that fosters collaboration and connection.

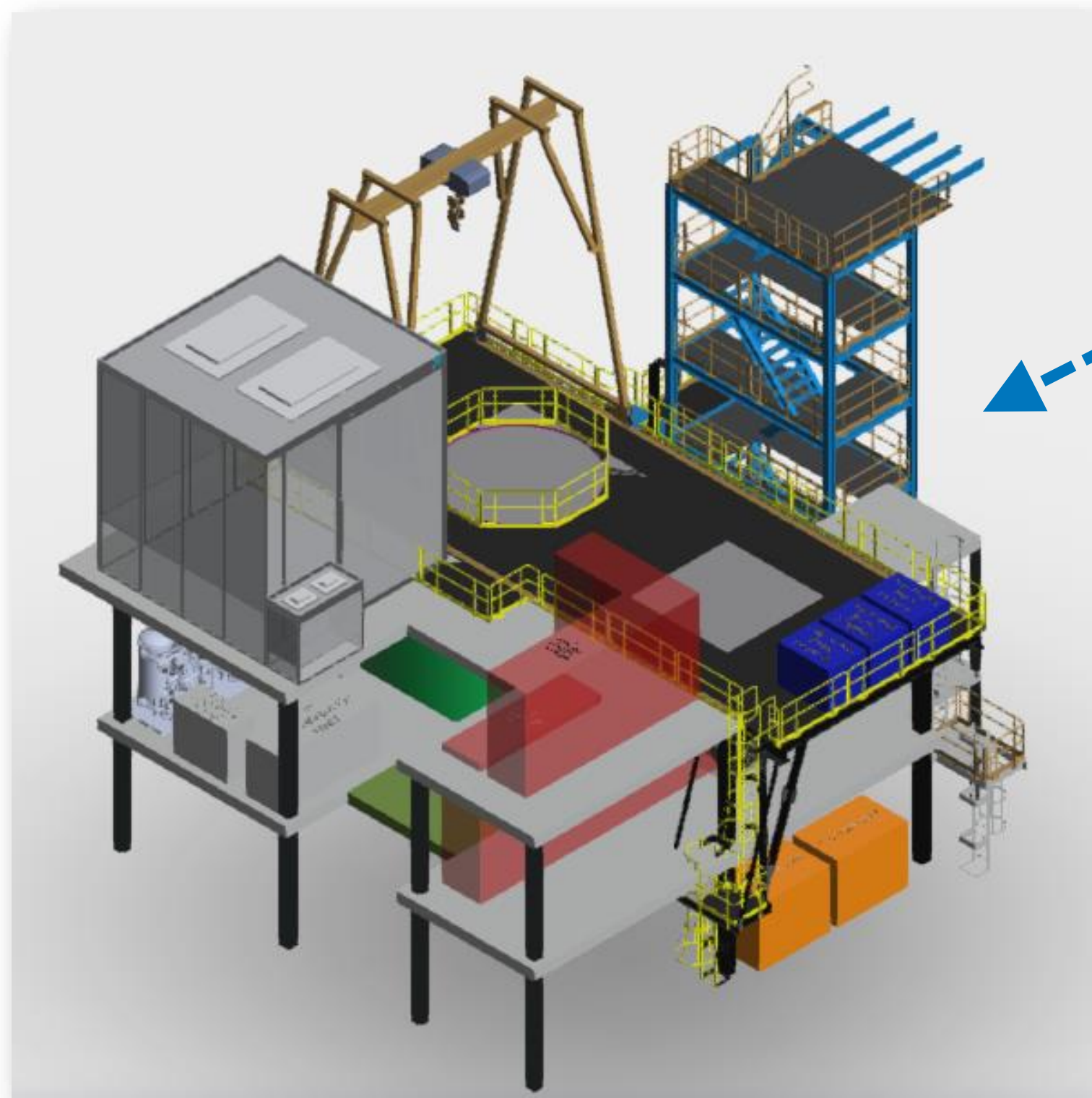


Spaces @ SNOLAB

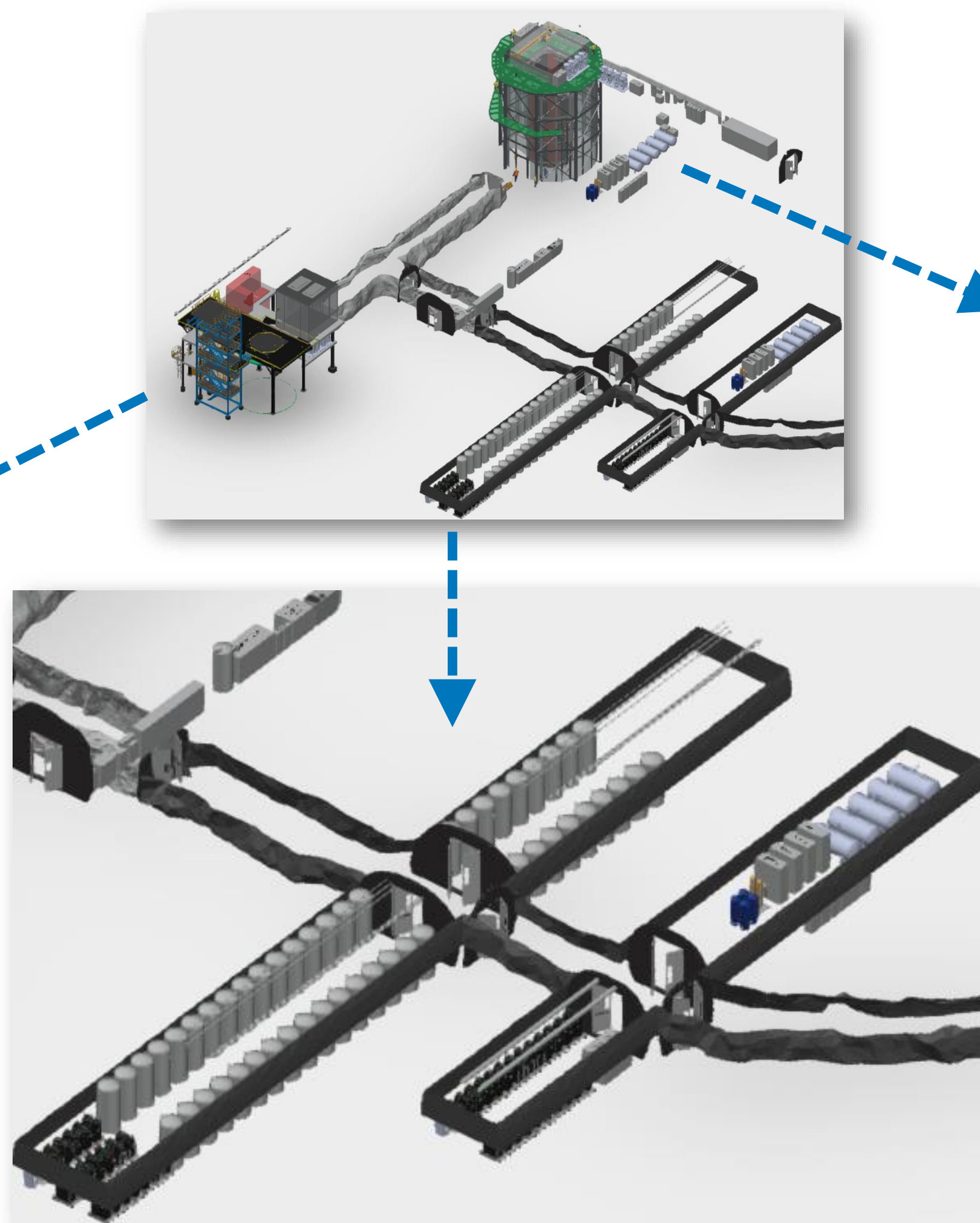
Experiment Areas
Current Experiments
Laboratory Facilities
Future Experiments



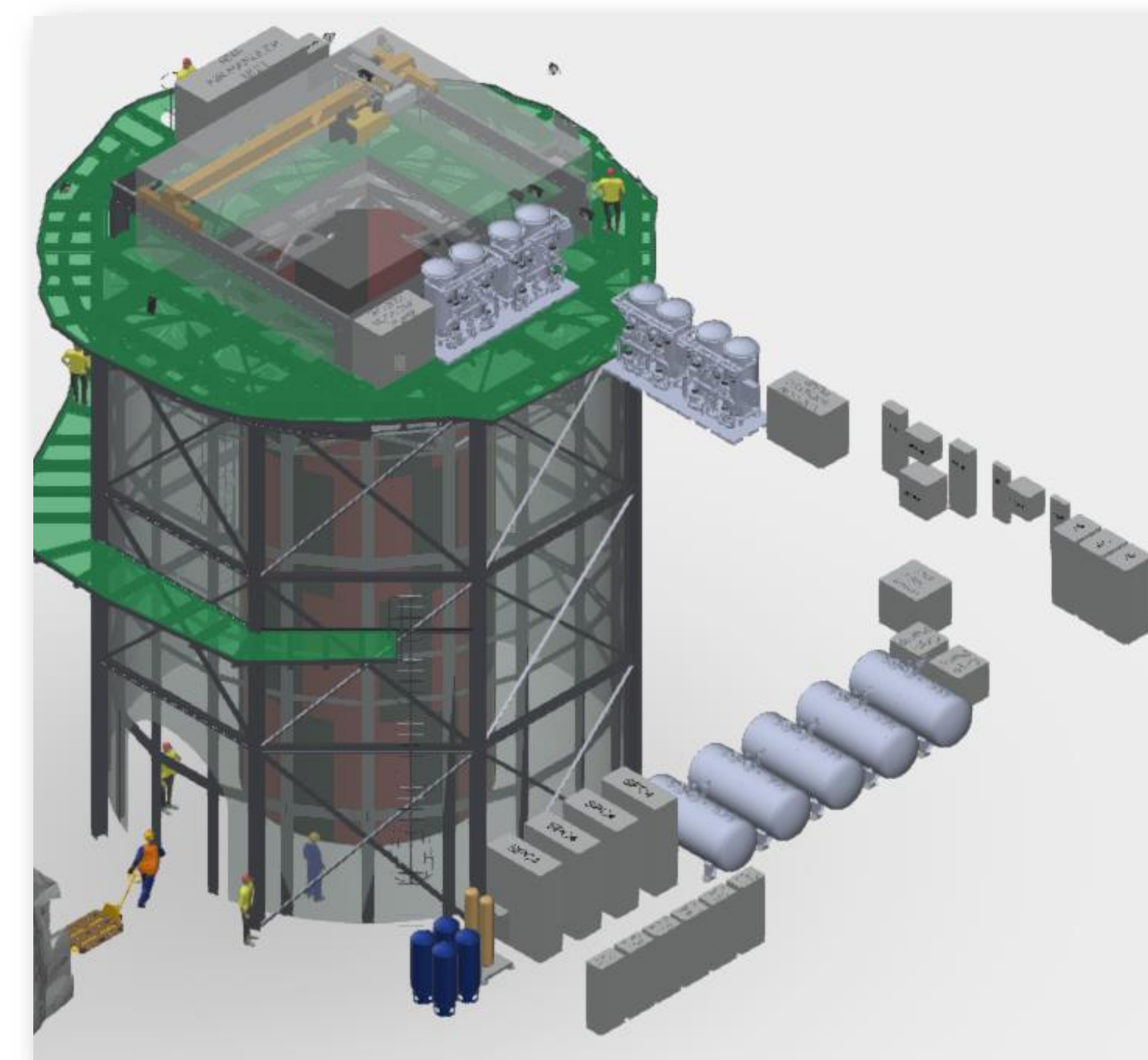
XLZD @ SNOLAB Concept



**Xenon Process Systems
& Clean Assembly Areas**



**Xenon Storage &
Recovery**



**Detector, Shielding Tank
& Cooling Systems**

New Funding to Advance XLZD Design



SNOLAB received \$1.2M from CFI to advance the XLZD@SNOLAB design:

- **Cryostat:** understand how to build the XLZD cryostat in the SNOLAB Cryopit.
- **Heat Rejection:** develop the chilled-water system needed to support XLZD cryogenic operations and assess associated oxygen-deficiency hazards.
- **Xenon Storage & Recovery:** develop solutions for underground storage and recovery of up to 100 tonnes of xenon.
- **Logistics:** increase capacity for movement of materials and equipment into SNOLAB.

Programming @SNOLAB - Summer 2027



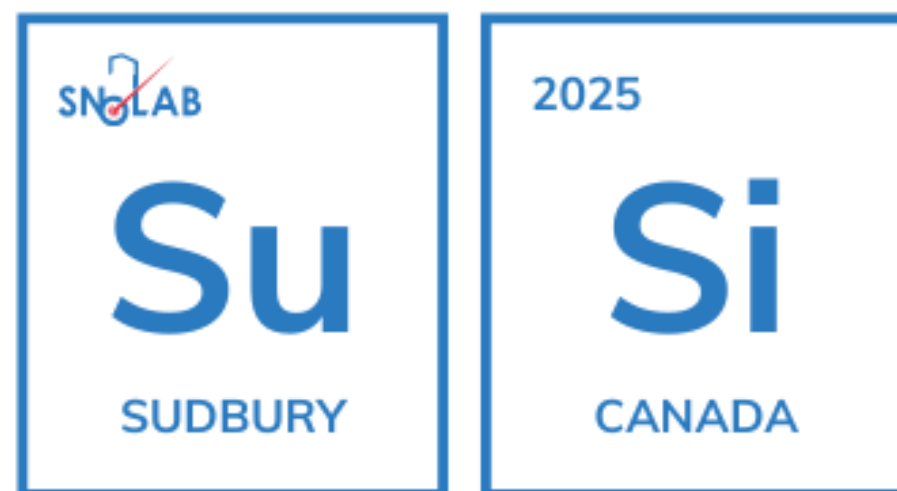
TRISEP Summer School: Specialized graduate-level training in particle physics and particle astrophysics, jointly delivered by SNOLAB, Perimeter Institute, and TRIUMF.

<https://www.trisep.ca/>



North-south EXchange for Underground Science

NEXUS Summer School: Focused training in underground science, connecting participants with expertise and research across the underground science community.



SNOLAB Underground
Science Institute

SuSi Lecture Program: Broad skills development and knowledge transfer through expert-led lectures, workshops, and professional development across emerging science and technology.

[SuSi2026 -- https://indico.snolab.ca/event/48/](https://indico.snolab.ca/event/48/)

New Projects for FY27



- ~\$2.7M investment in underground infrastructure: chiller drift remediation, TAD Expansion, Water Line replacement.
- ~730K investment in IT Upgrades including the final phases of the IT security project.

Experimental commitments	226,245.43
1806: SCDMS	65,614.00
2101: PICO	152,631.43
2105: SBC	8,000.00
2616: XLZD	-
Underground	2,753,994.09
2600: Chiller Drift	1,363,157.59
2613: TAD Extension	578,530.26
2713: 6800L Water Line Replacement	812,306.23
IT Upgrades	732,539.85
2720: Auditorium AV Upgrade	107,540.93
2102: IT Security	624,998.92
Existing projects	220,120.32
2501: LINEAR	52,200.00
2603: DT Generator	30,349.00
2604: RAMPS	35,479.63
2605: Fast Neutron Detector	37,641.24
2606: MAPLE	52,019.13
2608: Radon Trap	12,431.33
New initiatives	397,296.82
2701: MICRO	30,392.06
2704: Radon Calibration	8,964.17
2707: Cleanliness Initiatives	20,998.05
2711: ICP-MS	51,630.04
2712: Surface Chemical Storage	134,428.35
2717: NEARLINE	126,819.00
2718: Solid Scintillator Synthesis	24,065.15

Investment in Underground Systems



- ~1.05M investment in upgrading key systems and purchasing replacement parts.

UG Fire protection system upgrades	50,000.00
Surface building roof maintenance	200,000.00
Sanitary waste ejector pump	25,000.00
Fluid cooler loop critical spare pump	35,000.00
Chilled water loop critical spare pump	60,000.00
Double track sump pumps	25,000.00
Dolphin pump critical spare	71,000.00
HRV-1 replacement	150,000.00
Replacement UPSs	50,000.00
Surface AC-3	40,000.00
Underground AHUs	150,000.00
Furniture	193,000.00
	1,049,000.00

Looking Ahead



- SNOLAB is committed to a world-leading program of rare-event and underground science.
- XLZD is a strong fit with SNOLAB's science strategy and long-term vision, with active design work underway to understand what hosting the experiment would require.
- We are investing in the laboratory for the future by strengthening underground infrastructure, critical systems, and IT while supporting current experiments and new initiatives.
- We are investing in the community as well as the facility, including TRISEP, NEXUS, and SuSi programming that develops expertise and strengthens connections across underground science.
- Partnership with the community is essential to build the scientific case, engage funding agencies, and turn future flagship opportunities into reality.

Discussion and Questions

