

Underground Facilities and Infrastructure (UF)

Co-Conveners

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24 September 2021

* Presenting

Underground Facilities and Infrastructure Frontier



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Topical Group		Topical Group co-Conveners and Liaisons			
		Co-conveners			Liaisons
UF01	Underground Facilities for Neutrinos	<u>Accelerator Neutrinos</u> Tim Bolton	<u>0νββ</u> Patrick Decowski Danielle Speller		<u>Neutrinos</u> Albert de Roeck <u>Astronomical v</u> Gabriel Orebi Gann
UF02	Underground Facilities for Cosmic Frontier	<u>LXe DM</u> Kaixuan Ni <u>Low Mass</u> Scott Hertel	<u>LAr DM</u> Emilija Pantic		<u>Particle DM</u> Hugh Lippincott Jodi Cooley <u>Instrumentation</u> Eric Dahl
UF03	Underground Detectors	<u>Gravity Waves</u> TBD			<u>Instrumentation Frontier</u> TBD
UF04	Supporting Capabilities	<u>Radon</u> Richard Schnee	<u>Cleanliness</u> Alvine Kamaha	<u>Low Background Assay</u> Brianna Mount	
UF05	Synergistic Research	<u>Nuclear Astrophysics</u> Daniel Robertson	<u>Geo-microbiology</u> TBD	<u>Geo-engineering</u> TBD	<u>QIS, QC</u> TBD
UF06	An Integrated Strategy for Underground Facilities and Infrastructure	Laura Baudis Kevin Lesko	Jeter Hall John Orrell	<u>Early Career</u> Pietro Giampa TBD	

Focus of Underground Facilities Group

- Understand current and planned underground facilities, underground space for experiments, and supporting capabilities
- Develop requirements and wishes for the future experiments and in particular new frontiers (e.g. QIS)
- Develop synergistic relationships among experiments (shared space, parallel use, partnerships, shared technology)
- R&D space and growth of new technologies
- Understand underground space requirements in closely related fields (nuclear astrophysics, $0\nu\beta\beta$, ...)
- Create a vision for underground facilities in the coming decades

2013 Underground Facility Report and Recommendations: [1401.6115](#)

15 pages

2 page summary

Short bulleted list of physics goals

Specific section for large detectors

Specific section on low background assay

Simple timeline of facilities & experiments

Specific table for *large* experiments

Summary of assay needs

Summary of existing infrastructure

Recommendations/Conclusions

1. Locate LBNE underground to realize its full science potential. This step would also provide a natural base for additional domestic underground capabilities at SURF in the future.
2. The U.S. has leading roles in many of the future dark matter, neutrinoless double beta decay and neutrino experiments.
3. More coordination and planning of underground facilities (overseas and domestic) is required to maintain this leading role, including use of existing U.S. infrastructure and closer coordination with SNOLAB as the deepest North American Lab.
4. Maintaining an underground facility that can be expanded to house the largest dark matter and neutrinoless double beta decay experiments would guarantee the ability of the U.S. to continue its strong role in the worldwide program of underground physics.

Goal: Underground Facilities Report

With these inputs, we will assemble:

Executive Summary

Physics goals for the coming 10 - 20 years

Recommendations

Gap analysis for infrastructure

What exists (worldwide)

What will be needed for this program

Plans & proposals to provide this infrastructure

Discussion on the US program in particular

A visionary plan for US Underground Physics Program

Immediate next steps for Underground Facilities & Infrastructure (UF)

Today:

UF parallel → No formal agenda. Open for Q&A.

We expect people will be attending other Frontiers

Coming weeks:

Re-start of UF Topical Convening organization

Plan for first Community-wide UF meeting (virtual)

Seeking your input and engagement – Please let us know!

Contact UF Co-Conveners...

Find at <https://www.snowmass21.org/underground/>

Or Slack: #underground_facilities_and_infrastructure