
Welcome to Snowmass @ LBNL

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Dec 10th, 2021

<https://sites.google.com/lbl.gov/snowmass2021lbl>

LBNL Snowmass Cross Cutting Steering Group



Reminder: Snowmass 2021

Work divided in ten frontiers

- Each frontier has 6 to 10 working groups

A few common goals:

- Engage widely the community
- Encourage to hear ideas from everyone, especially young members
- Let's not be afraid to lay out ambitious and scientifically sound ideas!

Snowmass Frontiers

Energy Frontier

Neutrino Physics Frontier

Rare Processes and Precision

Cosmic Frontier

Theory Frontier

Accelerator Frontier

Instrumentation Frontier

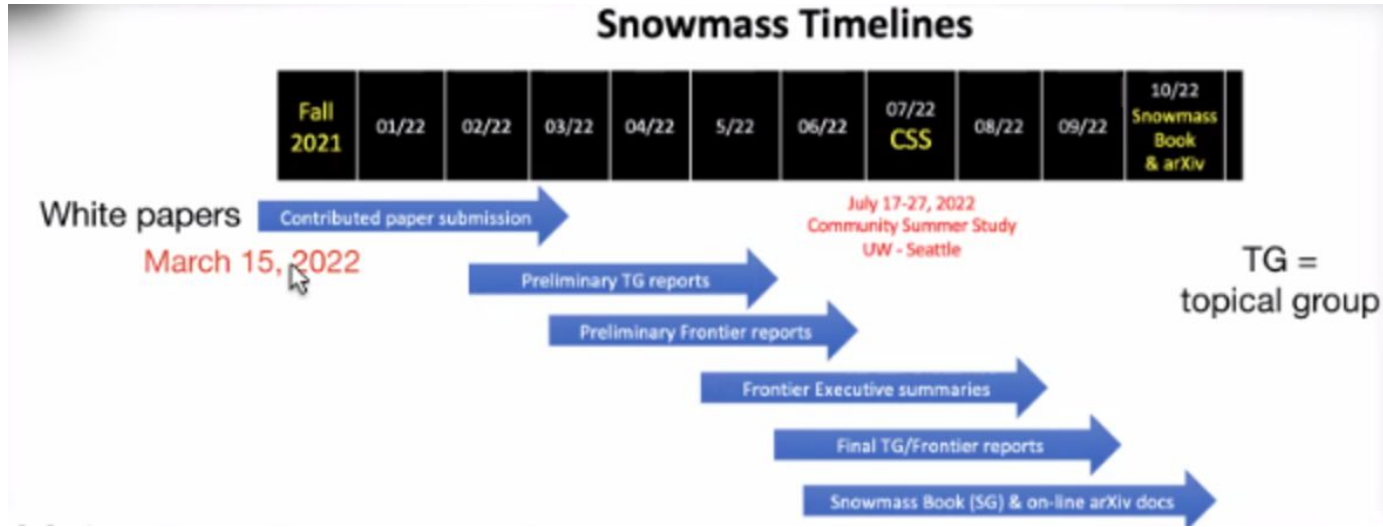
Computational Frontier

Underground Facilities

Community Engagement Frontier

LBNL is involved and often leads efforts in all these areas!

Reminder: Snowmass 2021



- Snowmass effort initially started in April 2020
- Long pause from Jan 2021 to ~now
- Snowmass (Half-)Day virtual meeting: Sep 24th 2021 [<https://indico.fnal.gov/event/50538/>]
- A key date to remember: March 15th 2022
– deadline for contributed papers submission from the community

Snowmass @ LBNL

- Previous event on Sep 17th 2021
 - Bring important questions at your attention, with focus on selected topics we believe LBNL can play a leading role in and are being less thoroughly explored in Snowmass
- Goal for today's event:
 - Continue discussion about critical projects where LBNL can play a leading role
 - Encourage you to be involved in Snowmass, either with your own project or joining existing efforts
 - Even a small contribution can make a big difference! Many examples shown during the sessions today

Snowmass @ LBNL

Rare opportunity to bring together a diverse set of expertise and foster collaborations!

Physics Division

Nuclear Science

Accelerator Technology
and Applied Physics

Computing Research
/ NERSC

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Practical Information

We are very happy to have the opportunity to hold the event in an hybrid format at LBNL!

Some sessions are fully-remote (e.g. this one) and some include in-person attendance as well

- Room: 50A-5132 (Sessler)
- Zoom coordinates vary session by session - see indico agenda

If you attend in person, we ask you to please follow the following guidelines:

- Attendance in Room 50A-5132 is **limited to 20 people**
 - If you have registered as in-person participant, please plan to come a bit early to ensure you find a spot (but we won't be able to accommodate everyone, sorry!)
 - If you have not registered as in-person participant, please connect via zoom
- NO food/drinks while in the room (we will take breaks)
- Wear a mask at all the times and please maintain 6ft distancing

If you need to continue a discussion between a few (≤ 7) people, you can use room **50-4058**

Today's program

Dark Matter

Hybrid (50A-5132, zoom)

9:00AM

What's ahead in the quest for direct detection of Dark Matter and what new ideas can shape how we'll build the next generation of Dark Matter detectors?

Community Engagement

Hybrid (50A-5132, zoom)

11:30AM

Discuss ongoing projects and opportunities for LBNL to contribute in this area.

Colliders

Hybrid (50A-5132, zoom)

1:00PM

Physics opportunities/challenges and accelerator technologies for future leptons and hadron colliders.

Note: @ 3:00PM discussion on neutrino physics opportunities at future muon colliders

Cosmic Frontier

- Postponed to a later date TBD

Neutrinos

Remote (zoom)

1:00PM

Long baseline physics at DUNE

Double beta decay into the normal hierarchy and low-energy physics

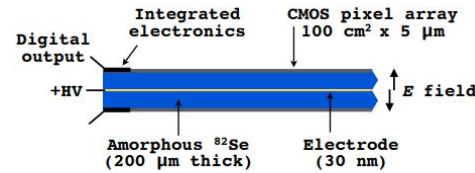
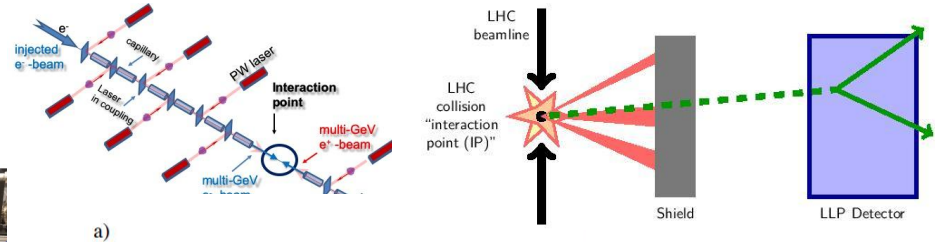
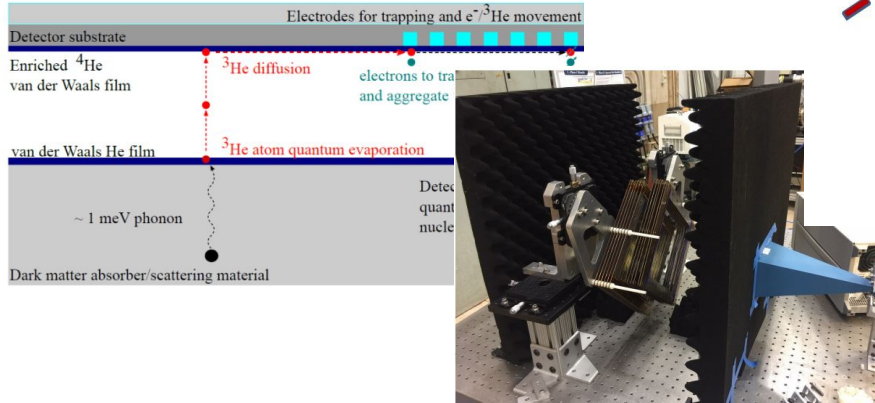
Machine-Learning

Hybrid (50A-5132, zoom)

Exploring how AI/ML techniques developed in different areas can uniquely address the demands of our future experiments needs

Small Experiments / Demonstrators on-site

- Dedicated session on future small experiments/demonstrators led by LBNL on Sep 17th
- Several interesting ideas discussed



... and many more!

- Looking for interest from other LBNL colleagues
- Attached to the Introduction session agenda:
 - [Link](#) to slide with proposals
 - [Link](#) to survey to fill in if you're interested / want to learn more:

What would you like to do? *

- Learn more / follow progress
- Get involved on theoretical side
- Get involved hands-on
- Help get students involved
- Organize a talk series
- Help with Snowmass white paper
- Propose a new experiment
- Other: _____

Enjoy and participate to the event!

- We hope today's event can stimulate interesting conversations and engage even more our community in this important process
- Please don't be shy to ask questions, express opinions and do not hesitate to contact the speakers or us during or after the event if you'd like to learn more about any of the topics discussed
- This is a great opportunity especially for young scientists to get involved in small (or not so small) projects and help shaping the future of the US particle physics program

Let's get started !!!