

# Snowmass planning: December

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- New year: Snowmass leadership change in 2022

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  - Latin America
    - Claudio Dib, Universidad Tecnica Federico Santa Maria, Chile

- Joel Butler: frontier meetings

## Meeting Schedule

frontier	dates		Host	
Instrumentation	2/14 – 2/18	Hybrid	Stony Brook	10,000
Theory	2/23 – 2/25	Hybrid	KITP	10,000
Neutrino	3/16 – 3/18	Hybrid	ORNL	10,000
Energy	3/28 - 4/1	Hybrid	Brown	10,000
Rare Processes	5/16 – 5/18	Hybrid	Cincinnati	10,000
Community Engagement	5/24 – 5/26	Hybrid	BNL	10,000

Contributed Paper deadline

- No conflicts among "All-Frontier" meetings so far. We should try to maintain this. April 9-12 is the APS April meeting and is out of bounds.

- Can DOE help with funding?

- Joel Butler: frontier meetings

## Proposal Preparation

- Abid Patwa has asked me to explore funding through a Field Work Proposal (FWP)
  - Would not be part of a solicitation, but be placed by Fermilab
  - Would result in subawards to each host institute
  - Funds come from the programs – not all DOE Program Managers have agreed
- A Fermilab Administrator who knows the latest procedure has been assigned to help
  - There are some complications, which she believes will not prevent this from going forward
- If this process is applicable, the actual paperwork is not too burdensome
- We have to submit this in the next few weeks

- What info is required from us?

- Joel Butler: proposal input 1

## Proposal Description (draft) Typical Requests for Support

- To help finalize the contributed papers **and frontier reports**, six of the frontiers (major physics and technical groups) plan to hold "all-frontier" meetings, between mid-February and **late May**. This proposal requests support to enhance the participation in these meetings by Early Career physicists, researchers from under-represented minorities, and people with disabilities. Funds will support waivers or reduction of registration fees and special travel allowances, and support for closed captioning, special AV equipment, and remote participation.

If you have something else in mind, please let me know ASAP.

- Joel Butler: proposal input 2

## What I need from you - I

- In the following six paragraphs, there are brief descriptions of each meeting (expected number of white papers, expected number of large, summary-type white papers, special considerations, use of funds in the four categories above)

- Energy:

- Neutrino:

- Rare Processes:

- Theory:

I would like to have these by Wednesday morning

- Instrumentation:

- Community Engagement:

## What I need from you - II

- From each, the name of contact physicist and an administrator at the hosting institute
- A budget breakdown (not sure what exactly we need)



- Joel Butler: comments

## Comments

- Too late for any more all-frontier meetings
  - No support for topical subgroup or cross-frontier meetings
- All meetings have a remote component but most also have an in-person component
- Our initial requests added up to more than we were told was reasonable and the total is way above any guidance we received
  - Not all Program Managers appear to be supportive
- There was a plan to host an EF young scientists meeting that was to be virtual only It appeared to cause confusion
  - We might want an all-Snowmass EC virtual meeting just before Snowmass

- Joel Butler: additional comments

## Topical Lectures and Discussion Sessions

- An important aspect of Snowmass is for there to be a broad understanding by the community of projects being developed in all frontiers
- Although we have been emphasizing cross-frontier communications, the pandemic and the “pause”, the frontier organization itself, the focus on white paper preparation early, the limited number of preparatory meetings, and the short Community Summer Study meeting make achieving this understanding difficult
- The issues for this Snowmass are also different from 2013, with possibly more emphasis on support of **R&D** for large future initiatives than support of new construction in this planning cycle
  - These R&D projects may require expensive demonstrator phases in this period
- In similar circumstances, DPF has sponsored a series of seminars on broad topics with an emphasis on providing a lot of public discussion on key issues



- Joel Butler: additional comments

## Current list proposed by FNAL for short lecture/discussion series

- “Collider Future” as a participant or a host site (**dates, topics announced**)
- “Muon Future”, studies of properties and rare decays (Muon Collider included in first group) and experiments that address similar issues (**dates and topics ready to be announced**)
- “Neutrino Future”, other neutrino experiments including extensions to DUNE near and far detector, neutrino properties and cross sections, etc (**proposed**)
- “Dark Matter Future”, mainly possible fixed target and other non-collider approaches (**in discussion**)
  - Other experiments that need protons might also be considered

The motivation for this group is that they all bear on the question of which facilities the US program should provide domestically and should participate in internationally. Since we have only one laboratory, Fermilab, dedicated to HEP, Fermilab has an interest in all these areas.

- Do we need to propose other lectures (flavor, small experiments, ...)?

- Sekhar Chivukula: comments on the final report

## Preamble

The charge of the Snowmass Process is to “define the most important questions in the field of particle physics and identify promising opportunities to address them.” The ten Snowmass Frontiers span five scientific areas of particle physics addressing fundamental questions about the universe, four technical areas which enable scientific work, and one addressing the community development needed to maintain a vibrant profession and to engage with society. In preparation for the reports from these ten frontiers, and to aid in synthesizing a comprehensive vision for U.S. particle physics, we ask that each frontier address the following questions.

- Input on the following questions is requested by Jan 3

- Sekhar Chivukula: comments on the final report

## 1. Planning for 2025-2035 with a view toward 2050

- What are the important scientific questions in your frontier of particle physics during this period? (Energy, Neutrino, Rare Process, Cosmic, and Theory Frontiers)
- What enabling tools, technologies, or facilities studied by your frontier are needed to address the pressing scientific questions in particle physics during this period? (Accelerator, Instrumentation, Computational, and Underground Facilities Frontiers)
- How can we ensure that the US particle physics community is vibrant, inclusive, diverse, and capable of addressing the scientific questions identified, and of fulfilling our obligations to society during this period? (Community Engagement Frontier)

## 2. Context

What can be expected from ongoing, approved, or planned scientific, technical, or community programs in addressing the issues identified by your frontier?

- Sekhar Chivukula: comments on the final report

## 3. Opportunities

- What opportunities identified by your frontier are there for new scientific, technical, or community activities to create transformative change in particle physics, on what timescales could these occur, and what resources are required to realize these activities?
- What investments need to be made during 2025-2035 for the continuing scientific, technical, or community progress identified by your frontier in the decades beyond, on what timescales can these be implemented, and what resources would be required?



## 4. Collaboration

What opportunities exist for cross-frontier, cross-disciplinary, or international collaboration and cooperation in the coming decade to enhance our ability to address the issues identified? How do these collaborations affect the timescales or resources needed for these activities?

## 5. Additional Input

Are there other issues identified by your frontier that are not included in the responses to the questions above?

- In particular, are there adverse scientific, technical, or community impacts from the COVID-19 pandemic that still need to be addressed?

Any Questions?



- Proposed discussion series:

## Snowmass Agora on Future Colliders

The events will be hosted by the Future Colliders initiative at Fermilab. The plan is to discuss both near and far future collider proposals, in different stages of development, synergistically grouped into five categories:

- **Linear e+e- colliders** Dec. 15, 2021
- **Circular e+e- colliders**
- **Muon colliders**
- **Circular pp and ep**
- **Advanced colliders**

Please encourage people from your frontier to attend!

The events will take place once a month from December 2021 till April 2022, on Wednesdays 3-5 p.m. CST. The detailed agenda will be announced soon. We request you to please save the following dates

- Dec. 15, 2021
- Jan. 19, 2022
- Feb. 16, 2022
- Mar. 16, 2022
- Apr. 13, 2022

A ``**Collider discussion**'' will organized during the **Energy Frontier Meeting** planned for the week of March 28 and open to everyone

- Proposed discussion series:

## Muon Properties: Proposed Agenda and Dates

### Jan 14<sup>th</sup>: 1 PM Central Standard Time (all talks are 20 min)

- 1:00 PM Physics Motivation for the Muon Program (A. Petrov, Wayne State)
- 1:20 PM Overview of the CLFV Program (R. Bernstein, FNAL)
- 1:40 PM Compressor Ring: Rebunching PIP-II (E. Prebys, U.C. Davis)
- 2:00 PM Targeting at 1MW in a Solenoid: (K. Lynch, York)
- 2:20 PM Questions and Discussion

### Jan 21<sup>st</sup>: 1 PM Central Standard Time (all talks are 20 min)

- 1:00 PM A Fixed-Field Alternating Gradient Synchrotron (PRISM) for Muon Experiments (Jaroslaw Pasternak, Imperial College London)
- 1:20 PM PSI: Meson production target stations and upgrade to HIMB (D. Kiselev, PSI)
- 1:40 PM Muon Decay Experiments: (F. Renga, INFN Roma)
- 2:00 PM Muon-to-Electron Conversion Experiments: (B. Echenard, Caltech)
- 2:20 PM Questions and Discussion

### Feb 4<sup>th</sup>: 2 PM Central Standard Time (all talks are 20 min)

- 2:00 PM Improved muEDM & negative Muon  $g-2$
- 2:20 Measuring the Proton EDM in a Storage Ring
- 2:40 The M<sup>3</sup> Experiment: Missing Muon Momentum as a Search For Dark Matter
- 3:00 Di-Muon-Spectroscopy Collider and Precision Tests in the Muon Sector
- 3:20 Questions and Discussion