

Snowmass' 2021

Accelerator Frontier

Zoom conference Wed., April 8, 2020 at 9am Chicago time
(7am West coast, 10am East coast, 4pm at CERN, 10pm Beijing).

Agenda

9:00- 9:10 Intro (Tor)

- timeline of main events re: Snowmass'21
- what's expected of the Group conveners and when
- liaisons: AF-EF, NF, rare processes, computation frontier

9:10-9:20 Communication/Contributions (Vladimir)

- Snowmass Web, Slack, Wiki: use and access, need to update scope/topics
- LOIs and contributed papers
- Indico for Workshops and writing summaries/Overleaf
- docdb

9:20-9:30 Workshops and Summary (Steve)

- planning timeline, effect of COVID, goals
- synergy with other Frontiers, events, conferences
- **concise summary** of action items for TGCs

9:30 -10:00 Q&A and AOB

4/8/20

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Snowmass'21

- ▶ Over the next year, the U.S. particle physics community will be engaged in Snowmass 2021, an in-depth process to define the most important questions for our field and to identify the most promising opportunities to address these questions in a global context. The process will have its roots in a series of preparatory meetings organized by Snowmass conveners, starting with a **Snowmass Planning Meeting at Fermilab on November 4 - 6, 2020**, and ending with a **Snowmass Summer Study at the University of Washington, Seattle, on July 11 - 20, 2021**.

Snowmass Process for Conveners

- ▶ The role of the Working Group Conveners (WGC) and Topical Group Conveners (TGC) is to *encourage community participation* in and discussion through the process
- ▶ Try to get main ideas for HEP future out for discussion in the form of Letters Of Intent (LOIs) this summer
- ▶ Based on these, start planning to get ready for the summer 2021 meeting
- ▶ Part of this role will be to organize workshops (sometimes jointly with other WG) to discuss and refine concepts

Snowmass Working Groups

::Snowmass Frontiers

ENERGY FRONTIER

NEUTRINO PHYSICS FRONTIER

RARE PROCESSES AND PRECISION

COSMIC FRONTIER

THEORY FRONTIER

ACCELERATOR SCIENCE/TECHNOLOGY

INSTRUMENTATION FRONTIER

COMPUTATIONAL FRONTIER

UNDERGROUND FACILITIES

COMMUNITY INVOLVEMENT

Accelerator Frontier

► Co-Conveners

Steve Gourlay (LBNL)

Tor Raubenheimer (SLAC)

Vladimir Shiltsev (FNAL)



► Description

The Accelerator Frontier activities include discussions on high-energy hadron and lepton colliders, high-intensity beams for neutrino research and for the “Physics Beyond Colliders”, accelerator technologies, science, education and outreach as well as the progress of core accelerator technology, including RF, magnets, targets and sources. Participants will submit LoI, contributed papers, take part in corresponding workshops and events, contribute to writing summaries and take part in the general Snowmass'21 events

Accelerator Frontier

Topical Groups and Co-Conveners

Topical Group	Co-Conveners			
AF1. Beam Physics and Education	Z. Huang (Stanford)	M. Bei (GSI)	S. Lund (MSU)	
AF2. Accelerators for Neutrinos	J. Galambos (ORNL)	B. Zwaska (FNAL)	G. Arduini (CERN)	
AF3. Accelerators for EW/Higgs	M. Ross (SLAC)	A. Seryi (JLAB)	Q. Qin (IHEP, Beijing)	
AF4. Multi-TeV Colliders	M. Palmer (BNL)	A. Valishev (FNAL)	N. Pastrone (INFN, Torino)	
AF5. Accelerators for PBC and Rare Processes	E. Prebys (UC Davis)	M. Lamont (CERN)	TBD	
AF6. Advanced Accelerator Concepts	C. Geddes (LBNL)	M. Hogan (SLAC)	P. Musumeci (UCLA)	R. Assmann (DESY)
AF7. Accelerator Technology R&D				
Sub-group RF	E. Nanny (SLAC)	S. Posen (FNAL)	H. Weise (DESY)	
Sub-Group Magnets	G. Sabbi (LBNL)	S. Zlobin (FNAL)	S. Izquierdo Bermudez (CERN)	
Sub-Group Targets/Sources	C. Barbier (ORNL)	Y. Sun (ANL)		

Snowmass Goals

- ▶ Snowmass is a process of engaging the HEP community in mapping a path forward for the next decade
- ▶ Seven different working groups with at least 3 focused on accelerator-based physics experiments
- ▶ The Accelerator Frontier group needs to first, get input from the other WG to understand what accelerator concepts could enable future physics discoveries and, second, educate the other WG as to what accelerators could deliver for their experiments
- ▶ To this end, we need extensive communication with the other WG; possibly facilitated with dedicated Liaisons.
- ▶ Still mapping out that process but part of the program will be common pre-meetings

TownHall Meeting April 18

- ▶ A virtual Town Hall meeting will take place at the original schedule (5:30 pm - 7:00 pm EDT on Saturday, April 18). We will provide a status report and receive your feedback. ZOOM connection by Web: <https://uchicagogroup.zoom.us/j/170161490> or by Phone: 877 853 5257, 888 475 4499, or your local number at <https://uchicagogroup.zoom.us/j/170161490> or by Phone: 877 853 5257, 888 475 4499, or your local number at <https://uchicagogroup.zoom.us/u/agjwAXAH5> (Meeting ID: 170 161 490)

Future Meetings of Acc. Fro.

- ▶ Take advantage of scheduled workshops where overlaps exist
 - ▶ GARD ABP Workshop has overlap with Acc. Sci, Edu and Outreach
 - ▶ Will engage Workshop Organizing Committee and TGC
 - ▶ 4 segments (one per week) starting in April using Zoom
 - ▶ HB2020 October 5-9, 2020 at Fermilab
- ▶ Schedule topical meetings with other WG conveners
 - ▶ Develop a suggested set of meetings
- ▶ Chance to discuss opportunities at TownHall
- ▶ We will have ongoing meetings with TGC's as we move forward

Communications and Contributions

- ▶ Web pages, Wiki, Slack, Indico
- ▶ LOI
- ▶ Contributed papers
- ▶ Docdb

<https://snowmass21.org/start>

SnowMass2021

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HELP

Communication Types

How to Edit This Wiki

Welcome to Snowmass 2021

The Snowmass Process is organized by the Division of Particles and Fields (DPF) of the American Physical Society. Snowmass is an opportunity for the entire HEP community to come together to identify and document a vision for the future of particle physics in the U.S. and its international partners.

We aim for everyone's voice to be heard. Your contributions and participation are critical for the success of Snowmass and they will naturally occur as part of one or more working groups directed by the conveners. There will be various Town Hall meetings for us to communicate with you and to receive your feedback. You are also welcome to provide input and suggestions on the Slack channel (<https://snowmass2021.slack.com/>). This Snowmass wiki provides news and announcements and has pages dedicated to each frontier. If you are an early career scientist, we encourage you to join the "Snowmass Young" mailing list (snowmass-young@fnal.gov) by emailing to listserv@listserv.fnal.gov with the body of the message "Subscribe snowmass-young YOUR NAME". Agendas and presentations of all Snowmass-related meetings are available via [this Snowmass Indico link](#).

Sincerely,

Young-Kee Kim (DPF Chair), Tao Han (DPF Chair-Elect), Joel Butler (DPF Vice-Chair), Priscilla Cushman (DPF Past Chair)

DPF Community Planning Process

Various workshops will be organized by Frontier Conveners between the 2020 Snowmass Planning Meeting (Nov. 4 - 6, 2020 at Fermilab) and the 2021 Snowmass Summer Study (July 11 - 20, 2021 at UW Seattle). Workshop locations will be chosen to maximize "inclusiveness" based on accessibility and economic consideration. For all the meetings and workshops, we will make sure that we are inclusive to those who participate remotely and we will have a special session to discuss APS efforts for openness and the importance of open international collaboration.

News Highlight

see *Announcements* tab on the sidebar for a complete list

News Highlight: Upcoming meeting

- A virtual **Town Hall meeting** will take place at the original schedule (5:30 pm - 7:00 pm EDT on Saturday, April 18). We will provide a status report and receive your feedback. ZOOM connection by Web: <https://uchicagogroup.zoom.us/j/170161490> or by Phone: 877 853 5257, 888 475 4499, or your local number at <https://uchicagogroup.zoom.us/j/ariwAXAH5> (Meeting ID: 170 161 490)

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ACCELERATOR FRONTIER

Edit

Frontier Conveners

Name	Institution	email
Steve Gourlay	Lawrence Berkeley National Laboratory	sagourlay[at]lbl.gov
Tor Raubenheimer	SLAC National Accelerator Laboratory	tor[at]slac.stanford.edu
Vladimir Shiltsev	FermiNational Accelerator Laboratory	shiltsev[at]fnal.gov

Edit

Description

The Accelerator Frontier activities include discussions on high-energy hadron and lepton colliders, high-intensity beams for neutrino research and for the "Physics Beyond Colliders", accelerator technologies, science, education and outreach as well as the progress of core accelerator technology, including RF, magnets, targets and sources. Participants will submit LoI, contributed papers, take part in corresponding workshops and events, contribute to writing summaries and take part in the general Snowmass'21 events.

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Topical groups

- [AF1: Accelerator Science, Education, Outreach](#)
- [AF2: Accelerators for Neutrinos](#)
- [AF3: Accelerators for EW/Higgs](#)
- [AF4: Multi-TeV Colliders](#)
- [AF5: Accelerators for PBC and Rare Processes](#)
- [AF6: Advanced Accelerator Concepts](#)
- [AF7: Accelerator Technology R&D](#)

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Topical groups

- **AF1: Accelerator Science, Education, Outreach**
- **AF2: Accelerators for Neutrinos**
- **AF3: Accelerators for EW/Higgs**
- **AF4: Multi-TeV Coliders**
- **AF5: Accelerators for PBC and Rare Processes**
- **AF6: Advanced Accelerator Concepts**
- **AF7: Accelerator Technology R&D**

Edit

Meetings

- Include your own ZOOM information for your Frontier
- Any other information about meetings can go here. For example, calendars.
- Meetings are via Indico. Go to [Indico link for our Frontier](#) to find agendas.
- All your slides should be uploaded first in docdb with the following keywords: *list them here*
- Your docdb link for this Frontier is [HERE](#)
- Then provide the direct link on Indico to the slides which reside on docdb

Edit

Group pages

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AF2: Accelerators for Neutrinos

Co-Conveners: John Galambos (ORNL), Bob Zwaska (Fermilab), Gianluigi Arduini (CERN)

Edit

Description

The next generation of neutrino experiments will require proton beam intensities and timing structures beyond the capabilities of any existing accelerators. In the Group we discuss:

1. Topic 1 (PIP-II and beyond)
2. Topic 2 (other superbeams)
3. Topic 3 (NuSTORM and Nu-Factories)
4. Topic 4 (other ideas)

Edit

Last modified: le 2020/04/08 11:08

<https://indico.fnal.gov/category/1105/>

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Accelerator Frontier

↑ Parent

Group 1: Accelerators for Neutrinos	empty	→
Group 2: Accelerators for EW/Higgs	empty	→
Group 3: Accelerators for Energy Frontier	empty	→
Group 4: Accelerators for PBC and Rare Processes	empty	→
Group 5: Advanced Accelerator Concepts	empty	→
Group 6: Accelerator Technology R&D	empty	→
Group 7: Accelerator Science, Education, Outreach	empty	→

👤 Managers

- 👤 Gourlay, S.
- 👤 Raubenheimer, T.
- 👤 Shiltsev, V.

SLACK and Wiki

- ▶ You are also welcome to provide input and suggestions on the Slack channel

<https://snowmass2021.slack.com/>

and the Snowmass wiki

https://snowmass-wiki.fnal.gov/wiki/Main_Page

which will have pages dedicated to each frontier (*empty now*).

Slack (after you register)

The screenshot shows a Slack workspace for 'snowmass2021'. The left sidebar contains navigation options: 'Get started', 'Mentions & reactions', 'Drafts', 'Saved', 'People', 'Apps', 'Files', 'Channels' (with #general selected), 'Direct messages', 'Slackbot', and 'Apps'. The main area shows a message in the #general channel from Peter Denton at 11:25 AM. The message includes a link to a CERN Courier article titled 'European strategy update postponed - CERN Courier' and an image of the 'European Strategy Update' logo. The message has 3 reactions. At the bottom, there is a text input field with the placeholder 'Send your first message to let your teammates know you're here.' and a date/time indicator '4/8/20'.

Browser address bar: <https://app.slack.com/client/TNNU4A570/CN7UPSM7U>

Search: snowmass2021

Channel: #general

Message from Peter Denton (11:25 AM):

Europeans are delaying their announcement: <https://cerncourier.com/a/european-strategy-update-postponed/>

CERN Courier
European strategy update postponed - CERN Courier
The CERN Council has agreed to put the release of the strategy update on hold due to the current COVID-19 situation.
Mar 31st (138 kB)

Image: European Strategy Update

Reactions: 3

Input field: Send your first message to let your teammates know you're here. 4/8/20

Communications - general

- ▶ Given the situation with the pandemic we will be forced to work remotely for the foreseeable future
 - ▶ It will take more energy to make it work - we need to be proactive rather than reactive - among our working groups and with the other Frontier areas
 - ▶ We need to open communication channels ASAP

Contributions

- ▶ “...To optimally engage all participants in the process, the Division of Particles and Fields invites the international community to submit written documents as described below. Given the increasing importance of interdisciplinary work in related fields such as astrophysics, cosmology, gravity, nuclear physics, accelerator physics, AMO, and materials science, members of the Divisions of Astrophysics, Gravitational Physics, Nuclear Physics, Physics of Beams and members of other units with a connection to particle physics are strongly encouraged to participate in this process.”
- ▶ **For reference: 164 10-page “Inputs” to EPPSU’2019**

Letters of Interest (LoI):

- ▶ **Submission period: April 1, 2020 - August 31, 2020**
- ▶ Letters of interest allow Snowmass conveners to see what proposals to expect and to encourage the community to begin studying them. They will help conveners to prepare the Snowmass Planning Meeting that will take place on November 4 - 6, 2020 at Fermilab. Letters should give brief descriptions of the proposal and cite the relevant papers to study. Instructions for submitting letters are available at <https://snowmass21.org/loi>. Authors of the letters are encouraged to submit a full writeup for their work as a contributed paper.

Contributed Papers:

- ▶ **Submission period: April 1, 2020 - July 31, 2021**
- ▶ Contributed papers will be part of the Snowmass proceedings. They may include white papers on specific scientific areas, technical articles presenting new results on relevant physics topics, and reasoned expressions of physics priorities, including those related to community involvement. These papers and discussions throughout the Snowmass process will help shape the long-term strategy of particle physics in the U.S. Contributed papers will remain part of the permanent record of Snowmass 2021. Instructions for submitting contributed papers are available at <https://snowmass21.org/submissions/>.

From Michael Peskin (SLAC) - coordinator of contributions, summaries and publications

- ▶ All formats OK
- ▶ Collective works - Overleaf preferred... <https://www.overleaf.com/>

The screenshot displays the Overleaf website interface. At the top, the Overleaf logo is on the left, and navigation links for 'Features & Benefits', 'Templates', 'Plans & Pricing', and 'Help' are in the center. On the right, there are 'Register' and 'Log In' buttons. The main banner features the text 'LaTeX, Evolved' in a large, white font, with the subtitle 'The easy to use, online, collaborative LaTeX editor' below it. A central image shows a preview of a LaTeX document titled 'The Universe' with a 'Recompile' button. Below the banner, a 'Get started now' section contains a registration form with fields for 'email@example.com' and a password, a 'Register' button, and checkboxes for 'I'd like emails about product offers and company news and events.' and 'or'. At the bottom, there are buttons for 'Register using Google' and 'Register using ORCID'.

Planning, Workshops, Activities

- ▶ Working through a pandemic
- ▶ Action Item timeline
 - ▶ Focus on now until November planning meeting at FNAL
- ▶ Summary of Action Items

Planning, Workshops and Activities

- ▶ Communication during a pandemic is a new challenge
 - ▶ Face-to-face meetings are preferred but are difficult to organize and not as frequent as one would like
 - ▶ Virtual meetings are easier to organize (we're not going anywhere) and they can be much more frequent
 - ▶ We suggest that you assign a “communications” coordinator to send out meeting invites

Planning, Workshops and Activities

Immediate Action Items for Topical Group Conveners

Add details to Topical Areas (descriptions on the wiki are notional so far)

- ▶ Identify all relevant topics
- ▶ **Assemble list of relevant conferences and workshops** (in-person and otherwise)
 - ▶ Examples
 - ▶ GARD ABP Workshop has overlap with Acc. Sci, Edu and Outreach
 - ▶ Will engage Workshop Organizing Committee and TGC
 - ▶ 4 segments (one per week) starting in April using Zoom
 - ▶ HB2020 October 5-9, 2020 at Fermilab
 - ▶ **Identify candidates for Snowmass-Young**
 - ▶ Goal is one per Topical Group/Sub-group
 - ▶ **Organize, strategize and determine how to kick-off the process**

Aim for a TGC progress Zoom meeting in approximately 2 weeks (third week of April)

Planning, Workshops and Activities

- ▶ We are working on identifying liaisons with relevant Frontier groups
 - ▶ Once established we need to work out how best to exchange information
- ▶ TGC's to generate a list of ideas (Go for at least 15!)
 - ▶ Aim for diversity, “irreverent” thinking
 - ▶ Input from colleagues overseas
- ▶ Based on these discussions, generate one-pagers to distribute to other Frontier groups (these will help us get a jump prior to Lol's)
 - ▶ Include description of state-of-the-art, assign TRL's, and perceived needs

These activities are something we can work on while we wait for the other Frontier groups to generate input to guide our focus. We need this as soon as possible.

Planning, Workshops and Activities

- ▶ Based on feedback from other Frontier groups
 - ▶ Identify primary obstacles to implementation
 - ▶ Draft of R&D needs
- ▶ Progress Zoom meeting(s) mid-May to review
- ▶ Meetings with liaisons as needed
 - ▶ These should be coordinated through the AF co-conveners
- ▶ Progress Zoom meeting(s) mid-June
- ▶ It gets a bit nebulous at this point, but as things evolve we will schedule more meetings as needed
 - ▶ Keep AF Co-conveners in the loop
 - ▶ We are here to help, not dictate
- ▶ Generate Lol's by August 31, 2020
- ▶ Prepare for Snowmass Planning Meeting at FNAL, November 4-6, 2020

Brief Summary of Action Items for Group Conveners

- ▶ **First set of Action Items**
 - ▶ Topical Area details
 - ▶ Identify relevant conferences/workshops
 - ▶ Snowmass-Young candidates
 - ▶ Kick-off process
- ▶ **Next**
 - ▶ List of ideas (be creative!)
 - ▶ One-pagers to Frontier Groups
 - ▶ Obstacles and R&D needs
 - ▶ Meetings with Liaisons
- ▶ **And . . .**
 - ▶ Work on soliciting and generating Lol's by Aug.31, 2020
 - ▶ Preparation for November 4-6, 2020 planning meeting at FNAL

Back-up slides