

Snowmass Process

November 20, 2020

ECFA meeting

Young-Kee Kim

University of Chicago

Chair, Division of Particles and Fields (DPF), American Physical Society

On behalf of the Snowmass Organization Team

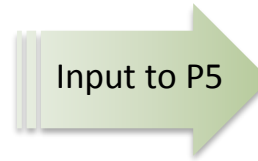
U.S. Strategic Planning Process for Particle Physics

~year-long process
Community-Wide **Science** Study
(a.k.a. “Snowmass”)

Define the most important questions for the field
Identify promising opportunities to address them

Organized by DPF

w/ other related divisions (DPB, DNP, DAP, DGRAV)



~year-long process
Particle Physics

Project Prioritization Panel (“P5”)

Formulate a 10-year execution plan
(20 year vision) within funding constraints
Subpanel of High Energy Physics Advisory
Panel for DOE/NSF funding agencies



Particle Physics is global:

Snowmass process involves the international community and strategies/plans from other regions

Particle Physics is not isolated:

Snowmass process involves communities and their strategies/plans from related fields
(Accelerator, Nuclear, Astro, Gravitational, AMO, ...)

Snowmass Advisory Group

- DPF Executive Committee

- Chair: Young-Kee Kim
- Chair-Elect: Tao Han
- Vice Chair: Joel Butler
- Past Chair: Prisca Cushman

Steering Group

- Secretary/Treasurer: Mirjam Cvetič
- Councilor: Elizabeth Simmons
- Member-at-Large: Rick Van Kooten
- Member-at-Large: Elizabeth Worcester
- Member-at-Large: Natalia Toro
- Member-at-Large: Andre de Gouvea
- Member-at-Large: Mary Bishai
- Member-at-Large: Lauren Tompkins
- Early Career Member-at-Large: Sara Simon

- Editor and Communication

- Editor – Michael Peskin
- Communication – Bob Bernstein

- Representatives from Related Divisions

- DPB (accelerator physics): Sergei Nagaitsev
- DNP (nuclear physics): Yury Kolomensky
- DAP (astro physics): Glennys Farrar
- DGRAV (gravitational physics): Gabriela Gonzales

- Representatives from the Int. Community

- Africa / Middle East
 - Azwinndini Muronga, Nelson Mandela Metropolitan Univ, South Africa
- Asia / Pacific
 - Atsuko Ichikawa, Kyoto University, Japan
 - Xinchou Lou, IHEP, China
- Canada
 - Heather Logan, Carleton University, Canada
- Europe
 - Val Gibson, Cavendish Laboratory, UK
 - Berrie Giebels, CNRS, France
- Latin America
 - Claudio Dib, Universidad Tecnica Federico Santa Maria, Chile

Steering group meets weekly

Advisory group meets once every 4 weeks

Monitoring the progress to make sure that all is moving forward smoothly to achieve the goals of the planning exercise

Transparent and Inclusive Process

- DPF Executive Committee + DPF Program Committee + Representatives of Related Divisions (DAP, DNP, DPB, DGRAV)
 - Initial organization work
 - Scope of each Frontier + first draft of topical groups of each Frontier
 - Facilitate convener nominations
- General call for frontier & topical convener nominations
 - Closed November 15, 2019
 - Self-nominated, by peer, or by a small group
- Frontier co-conveners (formed in January 2020)
 - Chosen by elected representatives (DPF EC + Chair-line of DAP, DNP, DPB, DGRAV)
 - Based on balance: senior/junior; theory/experiment; gender; region; labs/univ.s
 - ~3 co-conveners for each of the 10 Frontiers
- Topical groups and topical group conveners (formed in April 2020)
 - 6-10 topical groups for each frontier: ~80 topical groups in total
 - ~3 co-conveners for each topical group: topical group conveners from all the compiled nominations + others (e.g. international members), endorsed by the Steering Group
- Liaisons (formed Spring and Summer 2020)
 - Cross cutting areas

Frontier Conveners

Energy
Frontier



Meenakshi Narain
(Brown U)



Laura Reina
(FSU)



Alessandro Tricoli
(BNL)

Accelerator
Frontier



Steve Gourlay
(LBNL)



Tor Raubenheimer
(SLAC)



Vladimir Shiltsev
(FNAL)

Frontiers in
Neutrinos



Patrick Huber
(Virginia Tech)

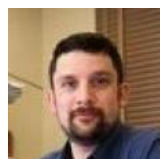


Kate Scholberg
(Duke U.)



Elizabeth Worcester
(BNL)

Instrumentation
Frontier



Phil Barbeau
(Duke)



Petra Merkel
(FNAL)



Jinlong Zhang
(ANL)

Frontiers in
Rare
Processes &
Precision
Meas.s



Marina Artuso
(Syracuse U.)



Alexey Petrov
(Wayne State U.)



Bob Bernstein
(FNAL)

Computational
Frontier



Steven Gottlieb
(Indiana U.)



Ben Nachman
(LBNL)



Oliver Gutsche
(FNAL)

Cosmic
Frontier



Aaron Chou
(Fermilab)

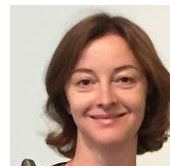


Marcelle Soares-Santos
(U.Michigan)



Tim Tait
(UC Irvine)

Underground
Facilities and
Infrastructure
Frontier



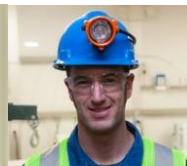
Laura Baudis
(U. Zurich)



Jeter Hall
(SNOLAB)



Kevin Lesko
(LBNL)



John Orrell
(PNNL)

Theory
Frontier



Nathaniel Craig
(UCSB)



Csaba Csaki
(Cornell)



Aida El-Khadra
(UIUC)

Community
Engagement
Frontier



Kétévi Assamagan
(BNL)



Breese Quinn
(Mississippi)

Snowmass Early Careers

- The Snowmass 2021 process is towards a long-term strategic plan
 - Voices of early career members are critically important
 - Enrich and strengthen Snowmass-Young (SNOWMASS-YOUNG@LISTSERV.FNAL.GOV)
 - Undergraduates, graduate students, postdocs, early-career faculty, engineers, etc. (Up to ~10 years post-PhD)
- Leadership
 - Forming representatives for Snowmass Early Careers
 - Solicited nominations: > 250 nominated!!
 - Coordinated by DPF Executive Committee Early Career Members
- Goals
 - Represent early careers and promote their engagement in the Snowmass process
 - Snowmass coordination: 2-3 Liaisons per Frontier
 - Build a long-term HEP early career community that persists after Snowmass
 - Survey of the early career membership
 - In-reach: Professional development, ...
 - EDI (diversity, equity, and inclusion)
 - Long-term organization

Snowmass Communication

- Wiki (<https://snowmass21.org/>)

- One-stop shop

- Organization
- Frontier/TG activities
- Calendars
- News and Announcements
- Community Contributions
-

- Monthly Snowmass Newsletter

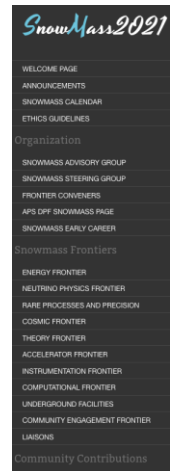
- Slack channels

- Email (anyone can join)

- snowmass@fnal.gov
- snowmass-young@fnal.gov
- Frontier & Topical group mailing lists

- Ethics

- Snowmass: dynamic exchange of ideas across a large swath of the community in a variety of formats (slack channels, meetings, workshops).
- All community members should feel safe and supported in engaging in all exchanges.
- DPF Ethics Task Force formed in April 2020 ([DPF Core Principles and Community Guidelines](#)), CP&CG Response Team for CPM formed
- DPF Ethics Advisory Committee formed (November 2020)



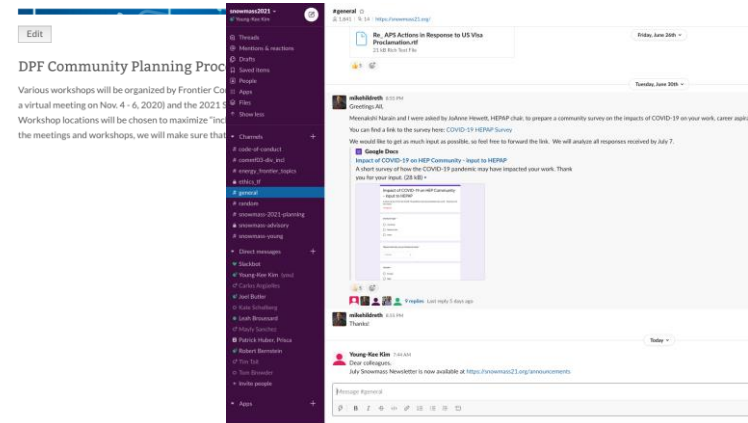
Welcome to Snowmass 2021

The Particle Physics Community Planning Exercise (a.k.a. "Snowmass") is organized by the Division of Particles and Fields (DPF) of the American Physical Society. Snowmass is a scientific study. It provides an opportunity for the entire particle physics community to come together to identify and document a scientific vision for the future of particle physics in the U.S. and its international partners. The P5 (Particle Physics Project Prioritization Panel) will take the scientific input from Snowmass and develop a strategic plan for U.S. particle physics that can be executed over a 10 year timescale. In the context of a 20-year global vision for the field.

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](#).

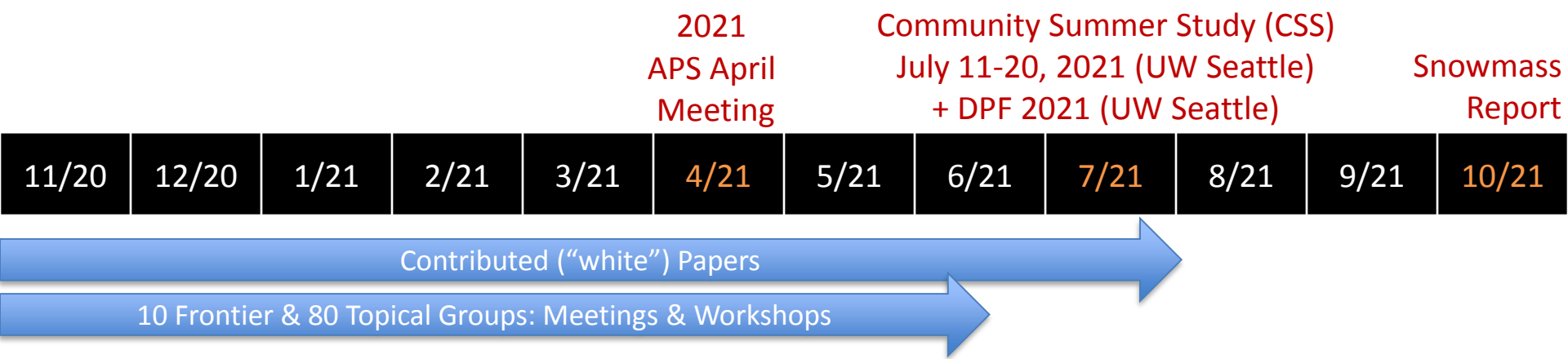
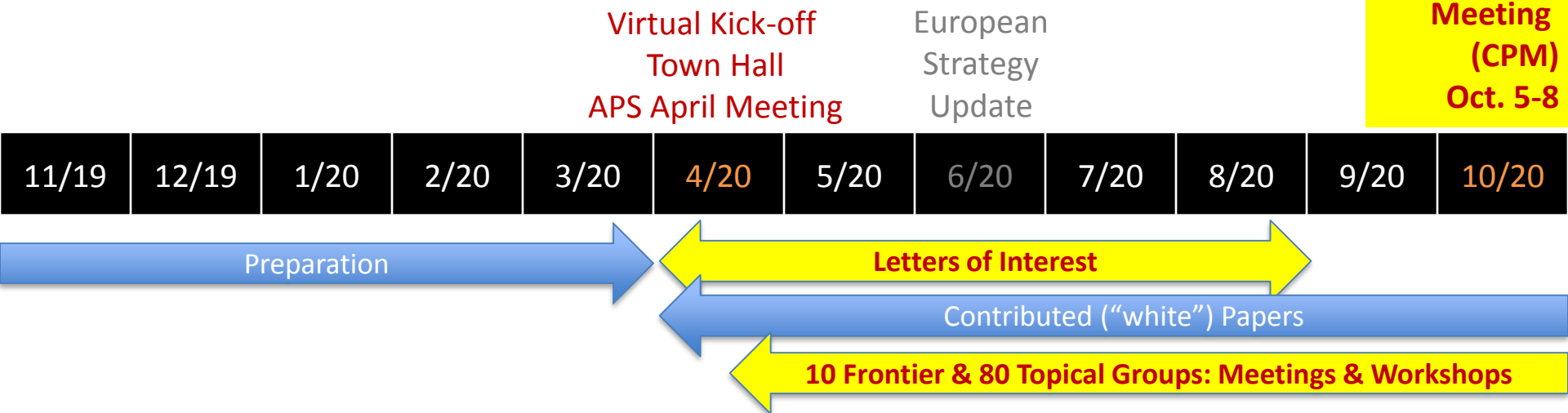
Sincerely,

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



Snowmass Timeline

Community Planning Meeting (CPM) Oct. 5-8

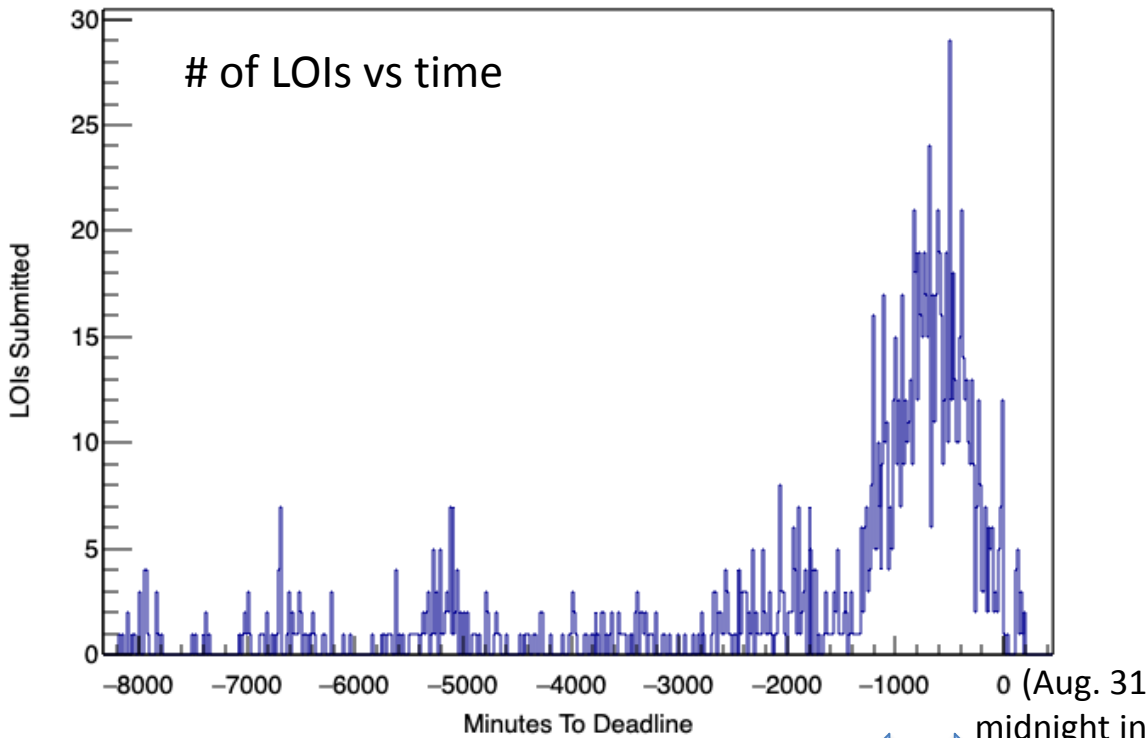


Letters of Interests

1,574 in total: submitted before August 31, 2020

Many LOIs – multiple frontiers

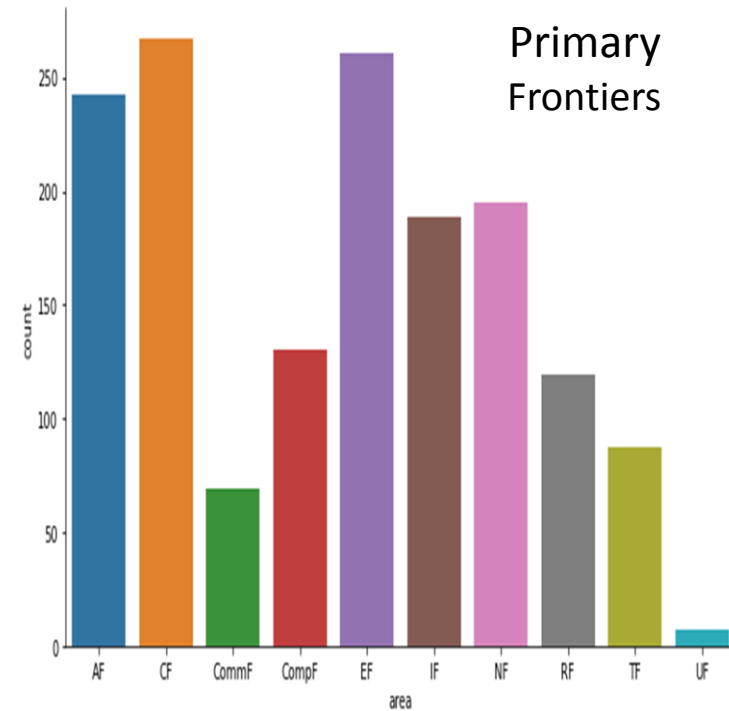
Frontier + TG conveners: tireless efforts to prepare the CPM using this information (Sept.)



(Credit: Sam Hedges)



20 hours



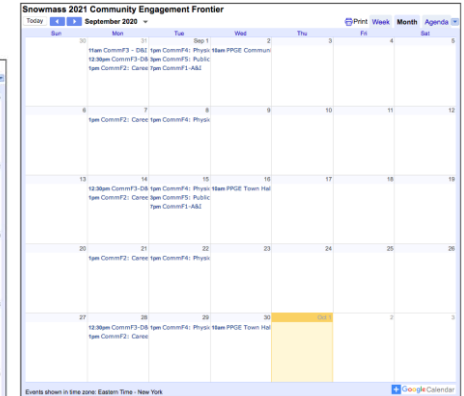
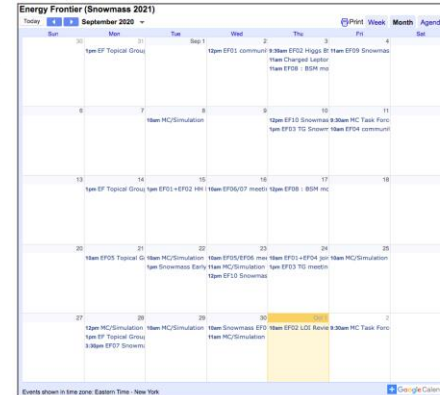
(Credit: Gordon Watts)

Community Planning Meeting (CPM): Goals

Community Engagement Frontier Calendar (Sept 2020)

- April 2020 – October 2020 (CPM)
 - Each Frontier and Topical Group: meetings and various workshops since Spring 2020

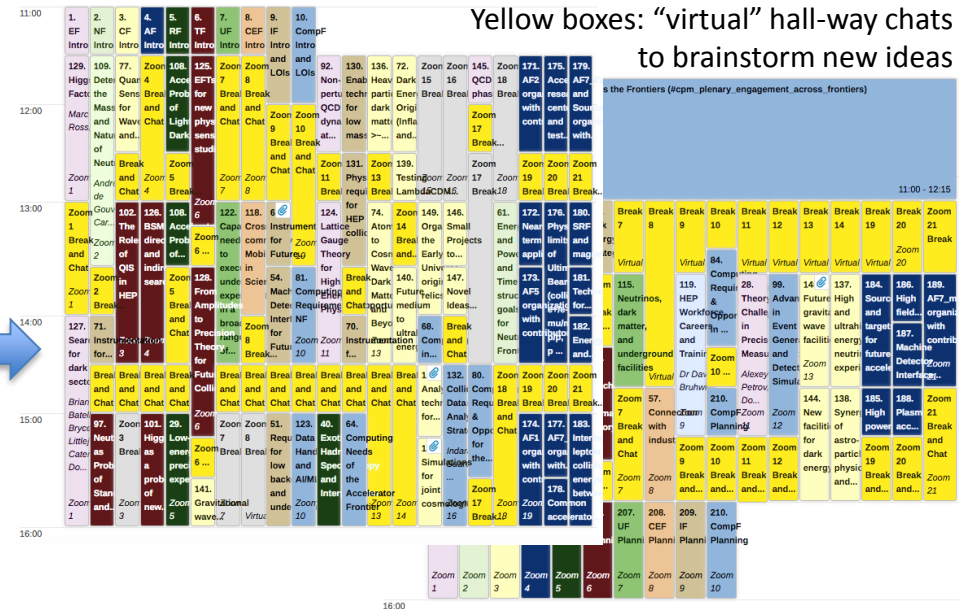
Energy Frontier Calendar (Sept 2020)



- CPM's goals
 - Develop plans and steps to take between October 2020 and the Snowmass Community Study in July 2021, leading to a final report in October 2021.

- CPM Plenary Sessions
 - Exciting Physics
 - Plans from other regions and related fields
 - Messages from funding agencies
 - Voices of the community

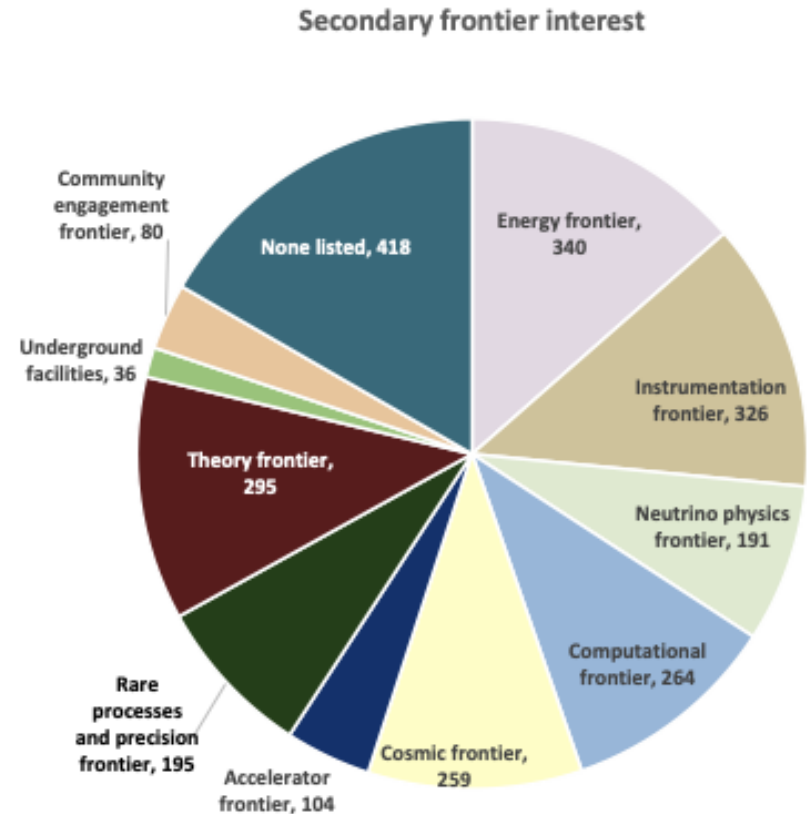
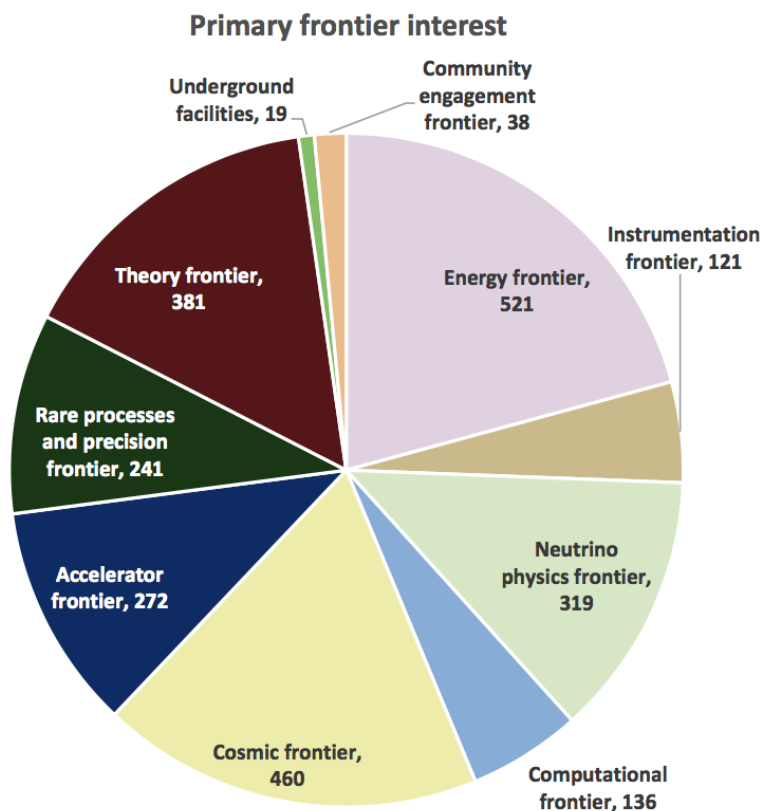
Yellow boxes: "virtual" hall-way chats to brainstorm new ideas



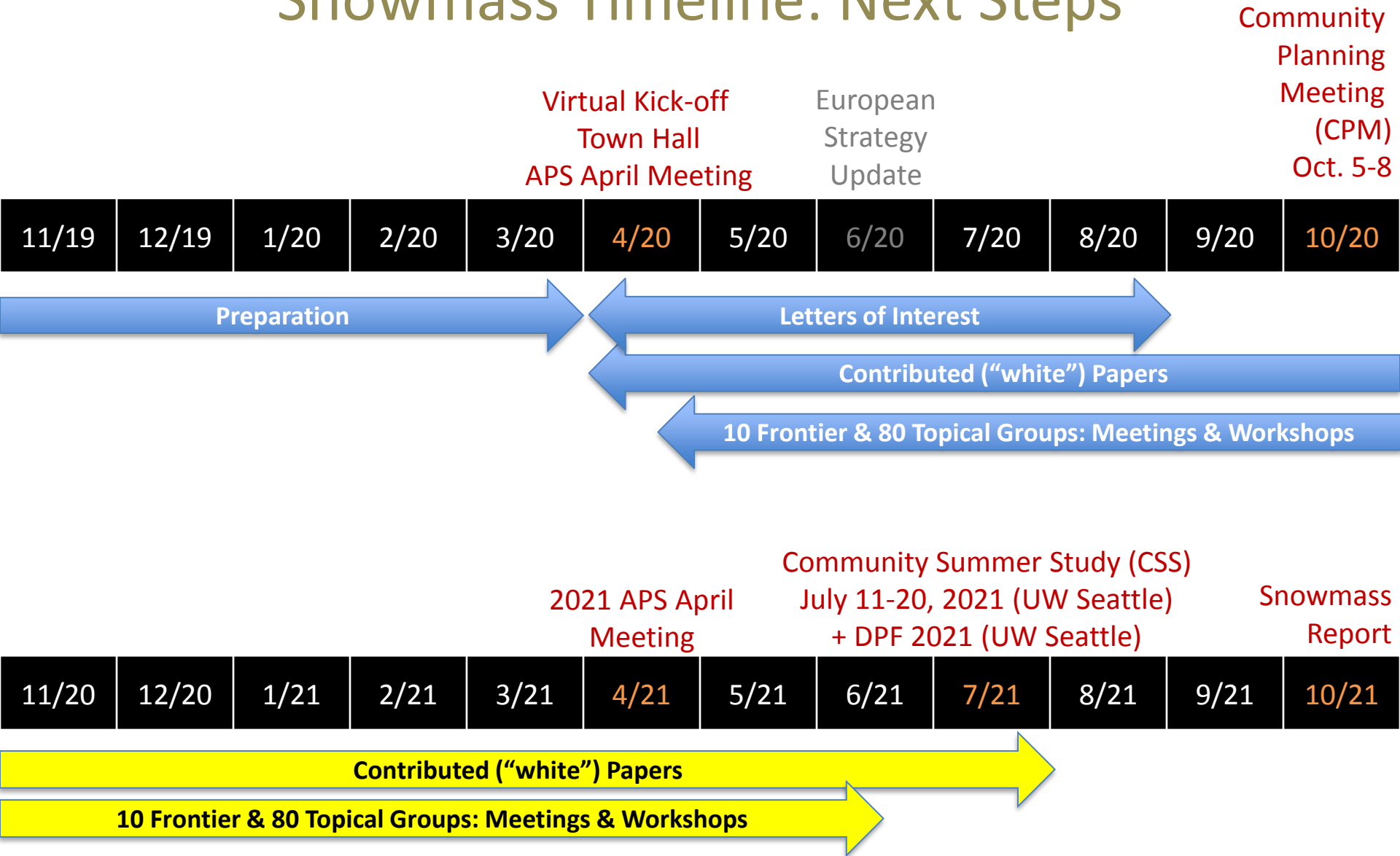
- CPM Parallel Sessions
 - First opportunity to bring together the community across the field
 - Focus on inter-frontier discussions
 - Establish cross working group connections.
 - Identify gaps and areas to focus / to study
 - Brainstorm new ideas

Snowmass Community Planning Meeting

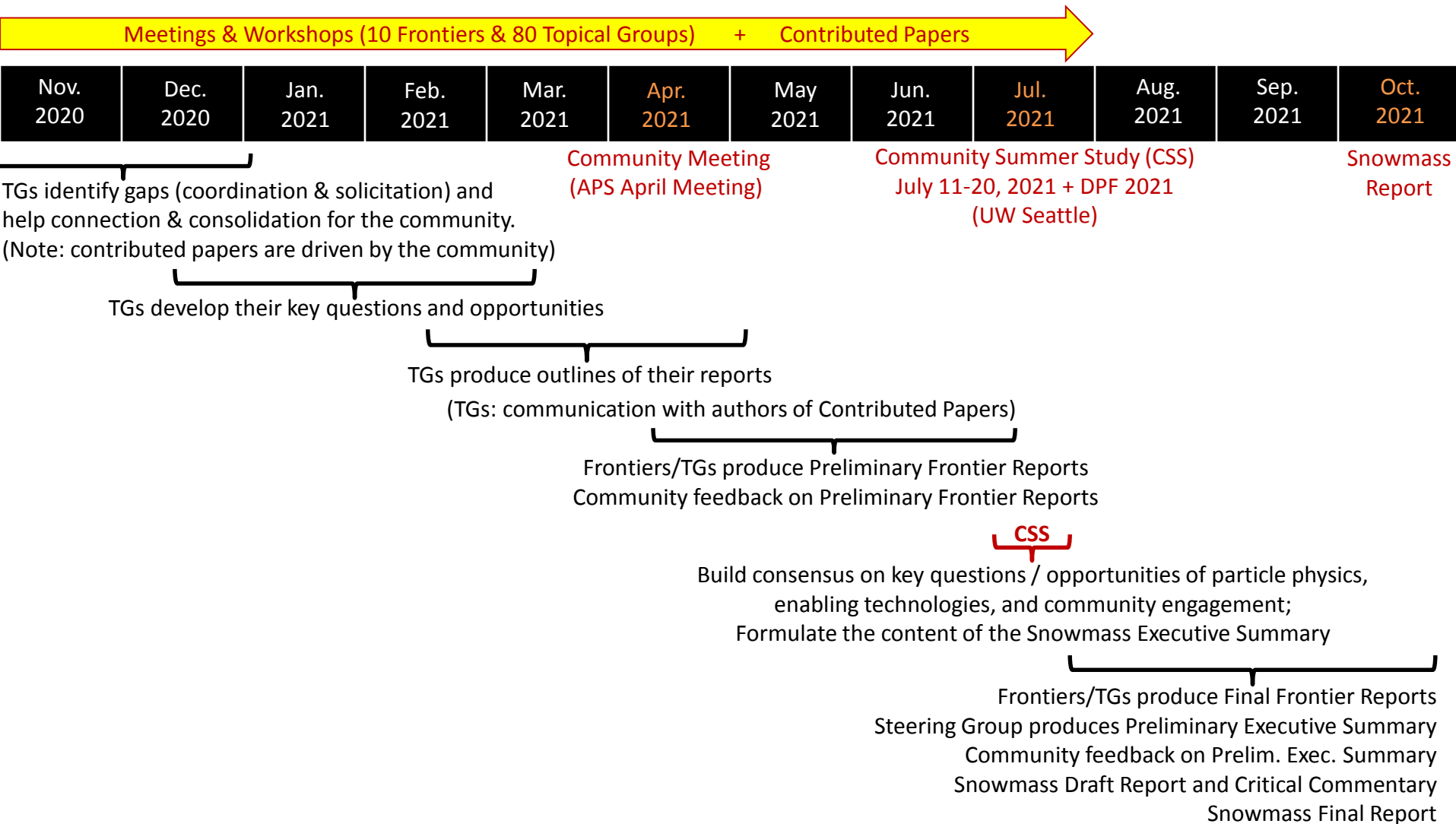
~3,000 participants from around the world



Snowmass Timeline: Next Steps



Next Steps: Preliminary Snowmass Timeline & Process



Snowmass 2021 Report Structure (Preliminary)

- **Snowmass Summary for the Public (2 pages)**
- **Snowmass Summary Report (~50 pages)**
 - Executive Summary: ~10 pages
 - Introduction
 - 10 Frontier Executive Summaries
 - Executive Summaries of Multi-Frontier Topics
 - Conclusion
- **Snowmass Book (~500 pages)**
 - Snowmass Summary Report (~50 pages)
 - Frontier Summaries (~400 pages with 10 Frontiers)
 - Multi-Frontier Topic Summaries (~50 pages)
- **Topical Group Reports**
 - Topical Group Reports: < a few ten pages each
- **Reports of Multi-Frontier Topics**
 - Multi-Frontier Topics spanning multiple Frontiers.
 - Each Multi-Frontier Topic Summary: ~10 page
- **Contributed Papers**
 - References

Snowmass 2021 Report Structure (Preliminary)

