

## US Snowmass Process

<https://snowmass21.org/>

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[virtual] CAP Congress, June 11, 2020

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## Purpose of Snowmass

United States' roughly-decadal particle physics long-range planning exercise. Run by American Physical Society - Division of Particles & Fields.

Used to take place in Snowmass, Colorado (small ski resort near Aspen); last Snowmass (2013) was geographically distributed with 10-day closeout meeting in Minneapolis.

Snowmass catalyzes studies and collects the physics cases for possible future facilities/programs.

Does not make funding recommendations.

→ Input to an ad-hoc HEPAP subpanel, which prioritizes and makes recommendations.

→ Funding priorities of (mainly) US Department of Energy.

## Purpose of Snowmass

Outputs of Snowmass 2013 (my own personal observations):

- First estimates of HL-LHC Higgs coupling capabilities & comparison to ILC
- TLEP “on a napkin” → FCC-ee & CEPC for Higgs
- First substantive physics studies of 100 TeV  $pp$  collider
- Collective generation of large Monte Carlo samples including handling pile-up for HL-LHC and higher-energy  $pp$  collider physics studies
- Many other things that I was too busy being a Higgs subgroup co-convenor to notice. :)

HEPAP → US involvement in HL-LHC and rededication of US on-shore HEP program to neutrino beam facility/DUNE

# Structure of Snowmass 2021

The screenshot shows the website <https://snowmass21.org/start>. The main content area features a large heading "Welcome to Snowmass 2021" and a "Table of Contents" link. The text describes the Snowmass Process organized by the Division of Particles and Fields (DPF) of the American Physical Society, aimed at identifying a vision for the future of particle physics in the U.S. and its international partners. It mentions various working groups, town hall meetings, and a Slack channel (<https://snowmass2021.slack.com/>). It also encourages early career scientists to join the "Snowmass Young" mailing list ([snowmass-young@fnal.gov](mailto:snowmass-young@fnal.gov)) and provides a link to Snowmass Indico.

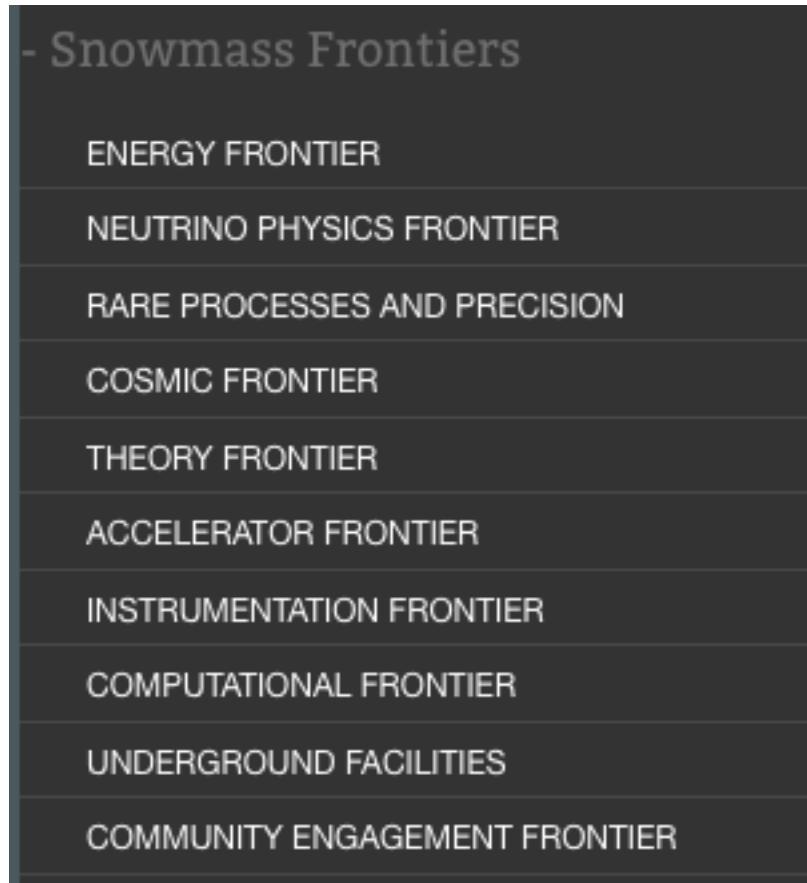
The sidebar on the left contains the following navigation items:

- WELCOME PAGE
- ANNOUNCEMENTS
- SNOWMASS CALENDAR
- ETHICS GUIDELINES
- Organization
  - SNOWMASS ADVISORY GROUP
  - SNOWMASS STEERING GROUP
  - FRONTIER CONVENERS
  - APS DPF SNOWMASS PAGE
  - SNOWMASS EARLY CAREER
- 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
- Community Contributions
  - LETTERS OF INTEREST
  - CONTRIBUTED PAPERS

The main content area also includes a "Sincerely," followed by the names of the DPF Chair, Chair-Elect, Vice-Chair, and Past Chair: Young-Kee Kim, Tao Han, Joel Butler, and Priscilla Cushman. Below this is a section titled "DPF Community Planning Process" which describes workshops organized by Frontier Conveners between the 2020 Snowmass Planning Meeting and the 2021 Snowmass Summer Study. A "News Highlight" section refers to the "Announcements" tab in the sidebar.

At the bottom of the page, there is a blue box containing the text: "News Highlight: Information and Upcoming Events".

## Structure of Snowmass 2021



- 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

Each “frontier” has overarching conveners

Divided into topical groups, with their own conveners

Complex calendar of meetings and events

Join the appropriate listservs if you are interested - low traffic, mainly meeting announcements

(Compare 2013: Energy / Intensity / Cosmic frontiers)

# Structure of Snowmass 2021

## Topical Group Conveners

Topical Group	Co-Conveners
EF01: EW Physics: Higgs Boson properties and couplings	Sally Dawson (BNL), Andrey Korytov (U Florida), Caterina Vernieri (SLAC)
EF02: EW Physics: Higgs Boson as a portal to new physics	Patrick Meade (Stony Brook), Isobel Ojalvo (Princeton)
EF03: EW Physics: Heavy flavor and top quark physics	Reinhard Schwienhorst (MSU), Doreen Wackerroth (Buffalo)
EF04: EW Physics: EW Precision Physics and constraining new physics	Alberto Belloni (Maryland), Ayres Freitas (Pittsburgh), Junping Tian (Tokyo)
EF05: QCD and strong interactions: Precision QCD	Michael Begel (BNL), Stefan Hoeche (FNAL), Michael Schmitt (Northwestern)
EF06: QCD and strong interactions: Hadronic structure and forward QCD	Huey-Wen Lin (MSU), Pavel Nadolsky (SMU), Christophe Royon (Kansas)
EF07: QCD and strong interactions: Heavy Ions	Yen-Jie Lee (MIT), Swagato Mukherjee (BNL)
EF08: BSM: Model specific explorations	Jim Hirschauer (FNAL), Elliot Lipeles (UPenn), Nausheen Shah (Wayne State)
EF09: BSM: More general explorations	Tulika Bose (U Wisconsin-Madison), Zhen Liu (Maryland), Simone Griso (LBL)
EF10: BSM: Dark Matter at colliders	Caterina Doglioni (Lund), LianTao Wang (Chicago)

## Upcoming activities and how to interface with Snowmass

Letters of Interest (max 2 pages text, due Aug 31, 2020)

The purpose of Letters of Interest (LoIs) is to allow Snowmass conveners to see what proposals are coming and to encourage the community to begin studying them. [...] These letters will help conveners to prepare the [Snowmass Planning Meeting that will take place on November 4-6, 2020 at Fermilab](#). [likely virtual]

Contributions to Snowmass 2021 (due July 31, 2021)

Snowmass 2021 Proceedings. White papers on specific scientific areas, technical articles presenting new results on relevant physics topics, and reasoned expressions of physics priorities [...]. Conclusion of the [2021 Snowmass Summer Study, July 11-20, 2021 at UW Seattle](#).

## What next

- Peruse the Snowmass website, <https://snowmass21.org/> to find where your interests fit in and/or sign up for stuff
- Look at the proceedings of the last Snowmass, <https://www.slac.stanford.edu/econf/C1307292/> to get an idea of what Snowmass output looks like
- If there are Canadian Contexts that are not being captured and you want me to bring them to the Snowmass Advisory Group (monthly meetings, starting next week), email me at [logan@physics.carleton.ca](mailto:logan@physics.carleton.ca)