
Monthly Snowmass Newsletter

October 2021

From the Steering Group

Dear Snowmass participants:

Greetings! After the pause/slowdown due to the COVID-19 pandemic since January 2021, the Snowmass Community process has resumed full activities in September 2021. The future plans for the frontiers were presented at the Snowmass Day on September 24 <https://indico.fnal.gov/event/50538/>

Talk slides and recordings are available at the indico site.

Oliver Gutsche has stepped down as a Computational Frontier co-convener because of his increasing responsibilities and workload at Fermilab. **Daniel Elvira** of Fermilab will be Oliver's successor as a new co-convener. We would like to thank Oliver for his contributions and leadership over the years, and thank Daniel for agreeing to serve the community!

Michelangelo Mangano of CERN will join the Snowmass Advisory Group as one of the representatives of the international community. We welcome Michelangelo and look forward to his contribution to the Snowmass process!

The next **Canadian Subatomic Physics Long-Range Plan** (SAPLRP) report has been finalized. It is a very informative document relevant to our Snowmass exercise and the file is available at

https://subatomicphysics.ca/wp/wp-content/uploads/SAPLRP_report_final_draft.pdf

Snowmass participants are encouraged to submit contributed (white) papers that will provide important input for the Snowmass documents. The submission deadline is March 15, 2022. <https://snowmass21.org/submissions/start>

The Community Summer Study (CSS) meeting will take place at the University of Washington-Seattle during July 17-27, 2022. The program organizing committee has been formed.

Future Snowmass activities are detailed on the Snowmass Wiki page

<https://snowmass21.org>

Please check there frequently for updates.

Snowmass Early Career

Snowmass Early Career (SEC) has revived its infrastructure of early career liaisons per frontier, which are meeting monthly. In parallel, pre-existing initiatives related to inreach, diversity/inclusion, and long-term organization are continuing to develop. The focus of all efforts for the remainder of the year will be to connect early career physicists to white paper studies. It is not too late to get involved, and we highly encourage any students/postdocs/early career faculty to consider joining physics efforts or the SEC initiatives! Inquiries can be directed to #welcome-to-snowmass.

Accelerator Frontier

The Accelerator Frontier efforts are organized in 7 Topical Groups and the Implementation Task Force and led by 30 conveners together with a dozen liaisons to 8 other Frontiers. Almost 330 Lols were received back in 2020 and we now expect some 60 White Papers to be submitted by the deadline of March 15, 2022. The most notable AF activities over the Snowmass-“pause” period and in Aug.-Sep. 2021 were :“Ultimate Beams/Colliders” Workshop series (AF1 “Beam Physics” et al); Muon Collider workshops and discussions with IMCC (CERN-led Intl’ Muon Collider Collaboration), EF, and TF; the MIT Workshop on cyclotrons and FFAs (AF5 and AF2); discussions with EF and TF on “Advanced Concepts” colliders (AF6); three topical workshops on accelerator technologies organized by AF7. The Implementation Task Force continued its regular meetings in 4 subgroups. Effective interactions had been taking place with the Muon Collider Forum (AF4, EF, TF, IF), the Fermilab Booster replacement Group and the Fermilab Collider Group led by P. Bhat. The latter considers three options for circular and three options for linear Fermilab site-fillers. During the Snowmass restart event, the AF breakout session was dedicated to very vivid liaison-led cross frontier discussions.

Community Engagement Frontier

The Community Engagement Frontier invites the Snowmass community to a mini workshop on October 29, starting at 9:00 US Central. We will review the contributed (white) papers under preparation and motivate contributions while maintaining engagements in the physics frontiers. During the pause/slowdown period, we added a new Topical Group on “Environmental and Societal Impacts.” We will discuss the scope of this new Topical Group and develop strategies to ramp up its activities. For all CEF Topical Groups, we will share lists of specific, focused tasks of limited scope that people can help out with, and we will need **your** help to finish the work that CEF needs to do for the community. So we ask everyone to please attend and select one thing that you can

contribute to the CEF effort. Preliminary agenda and registration information are available here <https://indico.fnal.gov/event/51291/timetable/?view=standard>.

On November 9, the Topical Group on Environmental and Societal Impacts will hold a dedicated workshop on Carbon Emissions at Future Facilities to learn about the field's current understanding of the carbon impact of the construction of HEP accelerator facilities and detectors, and of subsequent experimental operations, and to set directions for further studies. We invite Snowmass participants to join us in learning how we can contribute to this area, with the goal of establishing a better understanding of the issues and developing recommendations and best practices for the field in a contributed Snowmass paper; details are here <https://indico.fnal.gov/event/51385/>.

Cosmic Frontier

The Cosmic Frontier is now fully reactivated and each topical working group is currently working toward shepherding the identified white papers toward completion. That said, there are plenty of ways to get involved either in the existing efforts, or to discuss new ones. Please contact the conveners of the relevant topical working group(s) directly to find out more. <https://snowmass21.org/cosmic/start>

Computational Frontier

The Computational Frontier plans to hold a workshop on the computing needs of small experiments on November 15-16 (<https://indico.physics.lbl.gov/event/1756/overview>, please register). We will also engage with the community to make sure that we have appropriate contributed papers that will provide the essential background and evidence to support the conclusions of our topical group and frontier reports.

Meifeng Lin from BNL has joined our efforts as topical group convenor for CompF4: Storage and processing resource access (Facility and Infrastructure R&D).

If you plan to submit a white paper to the Computational Frontier, please submit it to arXiv by January 31st 2022, to be fully considered in the reports. If it's not ready by then, please submit a draft to the relevant topical group conveners of the Computational Frontier.

Energy Frontier

The Energy Frontier (EF) slowed down its activities in 2021 until the end of June, while part of the community continued to work collaboratively as needed. In this period, occasional and informal conversations were arranged to assure scientific continuity, and preparation for Monte Carlo production continued to support ongoing EF activities. To

regroup, a ‘*Restart Worksop*’ took place in the week of August 30-September 3 (<https://indico.fnal.gov/event/49756/>). In this workshop we assessed the progress made in all Topical Groups (TGs), we shared new studies and ideas, we identified gaps in our strategies, and we updated the community with schedule, goals and plans towards the final reports in summer 2022. Among all sessions, we want to highlight the lively cross-frontier discussions that were arranged with CompF, CEF, and AF. We encourage everyone to check the recordings posted on the indico page. During the ‘*Snowmass day*’ meeting on September 30th (<https://indico.fnal.gov/event/50538/>), the EF arranged a parallel session dedicated to early career scientists, where postdocs and graduate students, presented their own studies and their own perspective of EF.

Moving forward, in addition to the regular TG meetings, we plan in Winter ‘21-’22 a few one-day virtual workshops by topic (e.g. SM, Higgs, BSM, Colliders, etc.) to check progress towards the March ‘22 deadline for contributed papers, and discuss overlaps with other frontiers. In Spring 2022, we will arrange an EF workshop to review the contributed papers, focusing on their main themes and messages towards the May and June ‘22 deadlines for preliminary TG and EF reports, respectively, and converge on summary plots and tables.

We also welcome Antonio Boveia (Ohio State) as a new EF10 co-convenor, who will join the current co-convenors (Caterina Doglioni and LianTao Wang), as well as Manuel Franco Sevilla (Maryland) who will replace Angelo di Canto as liaison with the RF frontier.

Instrumentation Frontier

The Instrumentation Frontier plans to fully ramp up the frontier activities. All topical groups are refreshing the status and updating the plans. We are planning frontier wide workshops to facilitate the white paper process.

We also welcome our new IF10 topical group conveners, Amy Connolly (OSU) and Albrecht Karle (Wisconsin), as well thank the ex-conveners Abby Vieregge (Chicago) and Jim Beatty (OSU).

Neutrino Physics Frontier

The neutrino physics frontier has fully relaunched activities. We are hosting a series of “white paper coordination meetings” throughout the fall, approximately biweekly. They are listed on the [Snowmass wiki](#). Each meeting has nominally two 45-minute slots (although there is flexibility for use of them.) The idea is to coordinate white paper submissions and to get people working together effectively. Community members are encouraged to contact the Topical Group conveners in order to lead or participate in one of these coordination meetings, e.g., to recruit collaborators, or to explore a joint white paper with another group or between Frontiers. We fully expect some of these meetings

to lead to dedicated further meetings on a particular topic. Most nominal slots for the fall have been allocated, but we can add more or find different times if there is demand.

Rare Processes & Precision Measurements Frontier

The rare processes and precision measurements frontier is having ongoing discussions about how to structure topical group reports. It has a monthly meeting and the focus of the last one and the next one will be planning for the Frontier Workshop. We are planning a hybrid meeting 16-19 May 2022 in Cincinnati. We are allowing different topical groups to have different internal schedules, but drafts are due 31 March 2022 and reasonably final reports are due 1 June with a hard deadline of 15 June. We expect ongoing close communication among the TGs and the conveners so the contents of the reports will be known and discussed before receiving the actual text. The topical groups are discussing contributed papers with proponents and are coordinating those efforts.

Theory Frontier

The Theory Frontier had a successful Snowmass Day on September 24th, the process of preparing white papers was reviewed, as well as the deadlines for the topical group and frontier reports. Every topical group gave a short summary of their activities and status of white papers. The TF also set up a document with the list of anticipated white papers, where those interested in contributing can see if anyone is already working on a particular topic, and can add information about other contributions in preparation. The link can be found on the TF Snowmass Wiki. The date for the Theory Frontier Conference at the KITP has been set to February 23-25, in hybrid format, including in-person participants and also participation via Zoom. Preparations for the KITP meeting will be starting soon.

Underground Facility and Infrastructure Frontier

The Underground Facility and Infrastructure Frontier (UF) is reinitiating Topical group activities, meeting with the UF Topical Conveners on Friday Oct. 15th. The key focus of UF restart planning is determining a UF Topical meeting schedule that integrates well with the other Frontiers. This organizational effort will likely consume the next several weeks as the UF Topical conveners determine a meeting schedule and seek to align with related meetings driven by other Frontiers. Meeting schedule rollout will follow and will be posted on the Snowmass website and UF Slack channels. Community members interested in aspects of UF are encouraged to contact the UF Conveners, Laura Baudis, Jeter Hall, Kevin Lesko, and John Orrell.