
Monthly Snowmass Newsletter

December 2021

From the Steering Group

Dear Snowmass participants:

While we are approaching the end of the year 2021, we would like to thank you for your tremendous efforts for the Snowmass activities! Looking back, we have experienced unprecedented challenges this year. We were forced to slow-down and pause our vibrant and full-scale activities in January 2021. The Steering Group continued to coordinate the whole process in this period, and the frontier leaders were instrumental despite extraordinary circumstances. All frontiers restarted our activities in September, held the “Snowmass Day” on Sept. 24. The Snowmass process is now back in a full swing. We have accomplished a lot – thanks to the collective efforts of every one of you! Special thanks to our frontier conveners, topical group conveners, frontier/topical group liaisons, early-career representatives and liaisons, and international members of the Snowmass Advisory Group for their leadership and tireless efforts during the process!

From the beginning of 2022, Joel Butler of Fermi National Accelerator Laboratory will step in as Chair of the Snowmass Steering Group in his capacity as Chair for the 2022 ASP DPF Executive Committee. André de Gouvêa of Northwestern University will join the SG in his capacity as Vice Chair of DPF EC. We look forward to the new leadership of the SG and to the active participation from you all. We will achieve our goal of reaching a grand vision for the bright future of high-energy physics at the end of the Snowmass process in 2022!

Once again, the 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 17-26, 2022. Future Snowmass activities are detailed on the [Snowmass wiki page](#). Please check there frequently for updates.

We wish you a wonderful holiday season and a prosperous new year!

Snowmass Early Career

Snowmass Early Career (SEC) is continuing organization towards the Community Summer Study via our Programming Committee liaisons, and planning for early career

participation and related sessions. Efforts towards a long-term EC organization after the conclusion of the Snowmass process are proceeding in the form of the “Big Questions” colloquium series. The next installation will be January 14 at 11:00am CT, where we will hear from Bonnie Fleming and Pedro Machado on neutrino physics. We still welcome any students/postdocs/early career faculty interested in joining physics efforts or the SEC initiatives! Inquiries can be directed to #welcome-to-snowmass.

Accelerator Frontier

The Accelerator Frontier is fully focused on coordination of the White Paper preparations and corresponding topical group discussions. Progress with the papers is regularly reviewed, e.g., at the latest meeting of the AF topical group conveners on Dec. 22, 2021. A very productive “Snowmass Agora #1” on Future e+e- linear colliders took place Dec 15 where three main technologies were presented and discussed (ILC and upgrades, CLIC and variations, C³= cold copper collider). It was jointly organized by the Accelerator and Energy Frontiers and the Fermilab Future Collider group, and led by D. Denisov (BNL) and S. Belomestnykh (FNAL). The next “Agora #2” meeting on circular e+e- colliders will take place January 19, 2022 and John Seeman of SLAC will be the AF co-convenor.

The AF Implementation Task Force is making good progress on the comparative analysis of the technical risks and readiness for more than 30 future collider options. The Accelerator Frontier is becoming more and more involved in organization of the e+e- collider forum - a joint AF-EF-IF initiative similar to the Snowmass muon collider forum.

The AF1 “Beam Physics, Education and Outreach” community meeting took place Nov. 22-23, 2021 and covered three main topics:

- i. physics limits of ultimate beams,
- ii. education, outreach, and diversity,
- iii. beam test facilities.

Alysia Marino is the new liaison with the Intensity Frontier as of November 1. Thanks to Laura Fields for previously serving in this role.

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. 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

We have updated our timeline for white paper submissions: To allow topical group conveners sufficient time to consider white papers, we ask all who wish to contribute to submit (via email to topical group conveners) at least a title and abstract by the end of January, 2022. White papers whose title and abstract are submitted later are not guaranteed full consideration. The general Snowmass deadline also applies.

We welcome Stephen Bailey as a new co-convenor of CompF7 (Reinterpretation and long-term preservation of data and code).

Energy Frontier

The first of the series of events organized by the Energy Frontier (EF) in partnership with the Accelerator Frontier (AF) and the Future Collider initiative at Fermilab, under the name of ‘*Snowmass Agora on Future Colliders*’, took place on [December 15, 2021](#), chaired by Dmitri Denisov (BNL) and Sergey Belomestnykh (FNAL), on the topic of linear e+e- colliders. It will be followed on January 19, 2022 by an event on circular e+e- colliders, chaired by Sarah Eno (Maryland) and John Seeman (SLAC). Future events will cover muon, pp and ep, as well as other advanced collider projects. Such a series of events is directed to a broad audience, beyond EF and AF, including early-careers, with the intention of critically discussing physics and technical aspects of various collider concepts, and specifically addressing both physics and feasibility, with ample time for Q&A. Such discussions will help clarify and form our vision for future collider prospects that will be eventually captured in the final Snowmass report.

The Energy Frontier is scheduling a workshop on March 28 to April 1, 2022, hosted by Brown University. The main goal will be the discussion and formation of our collective vision towards the final reports, starting from reviewing the contributed papers that will be submitted by the deadline of March 15, 2022, i.e. about two weeks before the workshop. In the meantime, topical groups continue to meet on a bi-weekly to monthly basis, focusing on plans for contributed papers.

A [list of expected contributions](#) is being compiled. This is a snapshot of the information we have collected from the community so far, and everyone is invited to ensure their planned contributions are represented in this list by contacting the relevant topical group convenors.

Instrumentation Frontier

All Instrumentation Frontier topical groups are organizing meetings and workshops for white paper preparation. Several cross-frontier workshops are being discussed for specific topics. Good progress has been made for planning the next frontier wide workshop scheduled jointly with a CPAD workshop on February 15-18, 2022.

Thanks to Phil Allport for the overview presentation on the ECFA Detector R&D Roadmap just before the final document became available.

Welcome our new IF02 co-convenor Carlos Escobar (FNAL), and thanks a lot to Mayly Sanchez for her great contributions in this capacity and staying as the IF-NF liaison.

Neutrino Physics Frontier

The Neutrino Physics Frontier has completed a series of “white paper coordination meetings” held throughout the fall; slides (and sometimes recordings) are linked on the [Snowmass wiki](#).

A timeline for NF report writing and community feedback has been developed and is posted [here](#). In January and February 2022 the NF will host a series of community meetings for feedback on the topical group reports.

The NF meeting at ORNL on March 16-18, 2022 will very likely be in a hybrid format. More information will be sent in January. After the NF meeting, we are planning a series of “Snowmass lectures” aimed at the entire Snowmass community.

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.

We welcome Manuel Franco Sevilla as the new liaison with the Energy Frontier and Mike Williams as the new liaison with the Computational Frontier. We thank outgoing liaisons Angelo Di Canto and Stefan Meinel for their contributions and are looking forward to continuing working with them as Topical Group co-conveners for RF1 and RF6, respectively.

Theory Frontier

The Theory Frontier 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 and the Contributed (White) paper section.

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

Updates to the UF Topical Groups have been added to the Snowmass Wiki website. This includes contact information for the UF Topical Co-Conveners. Descriptions of the UF Topical Group areas of focus are described. Immediate activities for UF include collaborative planning of workshops with the other Snowmass Frontiers regarding area of interest overlap. Community members interested in aspects of UF are encouraged to contact the UF Conveners, Laura Baudis, Jeter Hall, Kevin Lesko, and John Orrell.