
Monthly Snowmass Newsletter

November 2021

From the Steering Group

While we are entering the next phase of our Snowmass activities in consolidating our results and preparing the contributed papers, the Steering Group would like to sponsor a few lecture series and discussions, to be initiated and organized by the relevant frontiers, intended for all Snowmass participants. These will be built on the abundant information already provided by the current activities. The goal for the lecture series is to facilitate cross-frontier discussions and coordination, to discuss how the science shapes the requirements on future facilities, and to help us in our process of reaching a clear vision for our decadal goals and beyond. The first lecture sequences will cover collider facilities, as announced below. The next one will be on the experiments to study the properties of muons on the FNAL muon campus. Future lectures will be announced at a later time.

We would like to bring to your attention the recently completed [National Academy 2020 Decadal Survey of Astronomy](#). The charge of this survey in Astronomy has parallels to both the Snowmass and P5 processes in particle physics, and both the science and scientific community aspects of the survey include things that we might learn from as we complete our planning processes.

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. The CSS Program Committee has been formed.

Future Snowmass activities are detailed on the [Snowmass wiki page](#). Please check there frequently for updates.

Snowmass Early Career

Snowmass Early Career (SEC) is continuing to meet bi-monthly, with one monthly meeting for EC frontier liaisons and another for the early career core initiatives. Our “Big Questions” Colloquium Series continued in November with a well-attended discussion

on Future Colliders, thanks to speakers Derun Li and Meenakshi Narain. Progress has been made on the EC-related white papers, particularly on the structure of the Long-Term EC organization, through which we hope to continue a colloquium series highlighting early career speakers and topics. Within the frontiers, we encourage early career scientists to get involved with the writing of summary reports or making summary figures for the Snowmass report. Consideration is also being given to the Community Summer Study, particularly on how to reserve funding resources for early career in-person participation. 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

Focus of the Accelerator Frontier activities has shifted to preparation and coordination of the White Papers. At the meeting of the AF topical group conveners held on Nov 17, we reviewed the status of over 100 AF white papers which are at different stages. Several instances of required coordination (and possible joint papers) between the topical groups have been identified. The first two papers have been submitted to the Snowmass website. The AF Implementation Task Force is in the middle of its analysis of now over 30 future collider options with several new ones added just recently (updated CCC and ERL/CERC collider proposals, Fermi site filler proposals for a muon collider, linear SRF collider and a storage ring collider). They plan to have a draft report early 2022 and, after discussions with the community, final submission by the end of May'22.

Jointly with the Energy Frontier and the Fermilab Future Collider group, the AF has started the “Snowmass Agora on Future Colliders” event series – critical discussions on 5 different types of future colliders. The first one, on the linear e⁺e⁻ colliders will take place virtually on Wed., Dec 15, 2021, 3-5 pm CST, and will be convened by D. Denisov (BNL) and S. Belomestnykh (FNAL). See more details in the EF report to this Newsletter. The Accelerator Frontier has also endorsed another EF and IF initiative -- the e⁺-e⁻ collider forum.

Community Engagement Frontier

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.

The Computational Frontier held a workshop on the computing needs of small experiments on November 15-16 (<https://indico.physics.lbl.gov/event/1756/overview>, please register). There was a lot of interesting discussion, with the overall conclusion that just because an experiment is “small”, doesn’t mean that its computing needs are “easy”. The plan is to document/expand the results of the workshop through a white paper. Please join the slack channel #computingforsmallexps to participate.

We welcome Peter Onyisi (Energy Frontier) and Mike Williams (Rare Processes Frontier) as new liaisons.

Energy Frontier

The Energy Frontier has restarted all activities at full steam, including topical group meetings which are arranged on a bi-weekly to monthly basis. Our current main focus is to ramp up and crystallize the effort towards the March ‘22 deadline for contributed papers, as well as improve our understanding of the overlaps with other frontiers leading towards the final reports in Summer ‘22.

As a continuation of the close partnership between EF and AF, the two frontiers are jointly organizing a series of events named as ‘*Snowmass Agora on Future Colliders*’ to critically discuss physics and technical aspects of different HEP collider concepts. The events will be hosted by the Future Collider initiative at Fermilab. The discussions will include the following colliders: linear and circular ee, muon, pp and ep, as well as advanced concepts. The events will take place once a month from December ‘21 until April ‘22, on Wednesdays 3-5 p.m. CST. The detailed agenda will be announced soon.

This series of events will provide an opportunity for newcomers to learn about the physics reach and challenges of future collider concepts.

We thank Daniel Elvira (FNAL) for his contributions, as he moves from his role as EF liaison with CompF to take up his new responsibility of co-convening the CompF group. We also welcome Peter Onyisi (U. Texas) as the new liaison with CompF.

Instrumentation Frontier

The Instrumentation Frontier fully ramped up and all topical groups updated the status and plan for the white paper process. Topical groups will schedule regular meetings to organize and develop the white papers. A frontier wide workshop was held on November 19 for informing and engaging the community on the overall white paper preparation. The next frontier wide workshop is being planned jointly with a CPAD workshop on February 15-18, 2022.

Neutrino Physics Frontier

The Neutrino Physics Frontier continues to host “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. These will continue until the end of the year, and new slots can be created if desired.

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.

Alysia Marino is the new liaison with the Accelerator Frontier as of November 1. Thanks to Laura Fields for previously serving in this role (she will continue to be NF09 co-convener).

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 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 now restarted. Updates to the UF Topical Groups have been added to the Snowmass 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.