

Future Global Accelerator Facilities

Panel Session

Snowmass Community Planning Meeting
October 8, 2020

Panel Members

Masa Yamauchi, KEK, Japan
11pm



Fabiola Gianotti, CERN, Europe
4pm



Nigel Lockyer, FNAL, U.S.
9am



Yifang Wang, IHEP, China
10pm



Doon Gibbs, BNL, U.S.
10am

Structure of Panel Session

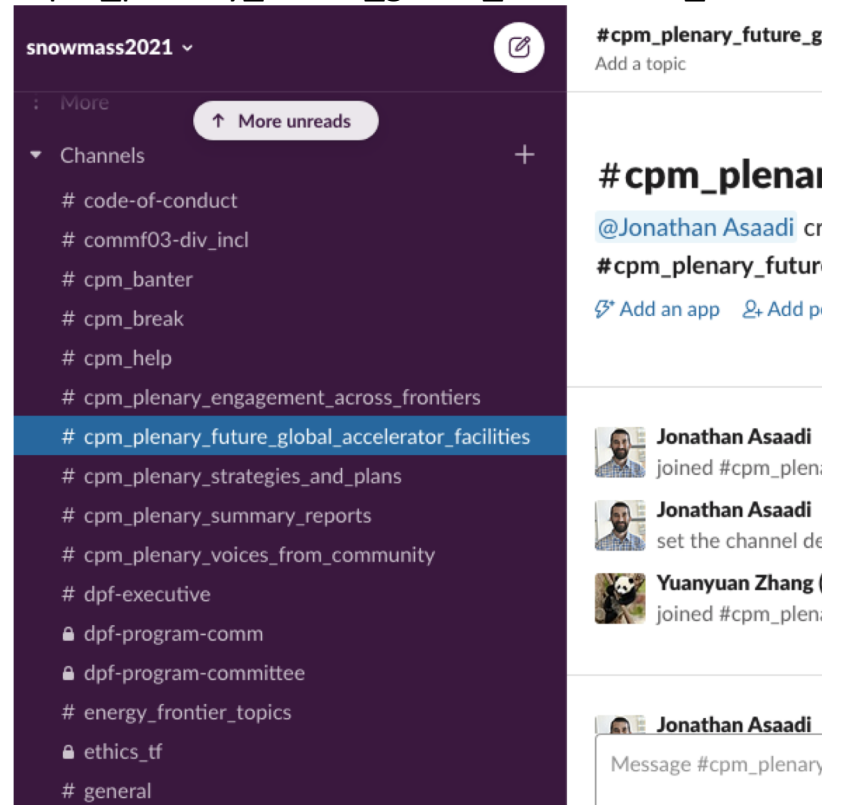
- Questions and comments submitted by the community
 - Attached to the indico page
 - Provided to the panel members
 - Some (e.g. Accelerator S&T, R&D, Education) would be addressed in their general remarks. Others will be answered after their remarks
- Program
 - ~25' General remarks by panel members.
 - ~20' Answering submitted questions from the community
 - Mega Projects
 - Roles of non-HEP Accelerator Facilities for Particle Physics
 - Balance: Small & Large, Accelerator- & Non-Accelerator-Based
 - Impacts on Society
 - ~10' Q/A from today's participants

Questions during the panel session

- Write questions into
 - Webinar Q&A window (preferred) →
 - Slack channel →
- Time permitting
 - Selected questions will be read by the session chair
- All the questions will be posted to this Slack channel
 - Panel members may address posted questions
 - Further discussion among participants is encouraged



#cpm_plenary_future_global_accelerator_facilities



Community Questions: Execution of Mega Projects

Any new accelerator such as a Higgs factory or a ~ 100 TeV scale proton-proton collider will be very costly and require years to construct: some major partner countries may see several changes of government.

- In planning for an international collaboration, due thought should be given to structuring participation so as to ensure the project's stability over a long term.
- Would it be prudent to build more than one Higgs factory in the world?
- What would be the timeline for constructing an experiment? In the spirit of “think global, act local”, what initiatives would be needed to promote a regional community to play a strong role in the physics output of such an experiment?

Involvement of students and researchers from developing countries in large experiments has been mostly through visits and contributions at the individual level.

- What considerations are being, and will be made to more fully include developing nations in the planning and execution of the projects to more completely bridge the gap between these two groups of our community (developing and developed nations)?

Community Questions: Roles of non-HEP Accelerator Facilities

Accelerator R&D is inherently complex and costly, and the construction of new facilities is far and few. Non-traditional particle accelerator facilities can play an important role in particle physics.

- What are synergies between the nuclear physics driven EIC (Electron Ion Collider) and high energy physics science and technology?
- How should the community take advantage of facilities such as SNS and ESS to advance the field of particle physics and coordinate efforts with these facilities to maximize the return of our accelerator research?

Community Questions: Balance

A healthy global HEP program needs to maintain a balance of small, medium, and large projects, especially in the presence of a potential mega-project.

- What measures can we put in place to maintain this balance of projects in the context of future collider mega-projects?

Originally concentrating on accelerators with ever higher energies, over the last three decades “high energy” physics in the U.S. and other regions is getting involved in various other activities which reduces resources for progress with accelerator-based experiments and theoretical activities.

- Is such increase in scope the best strategy?

Community Questions: Impacts on Society

We often make the case for our work in terms of the benefits of new technology for society. Yet, the most direct path for advancing the science may not always coincide with the path which best advances new technology.

- How could we organize our community to properly address both?

Environmental impact

- How could we mitigate or justify the environmental impact of building and running accelerators and detectors for next-generation HEP experiments