

# Looking towards the next U.S. strategic planning (Next Snowmass Science Study)

HEPAP meeting  
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Young-Kee Kim  
University of Chicago

On Behalf of the DPF Executive Committee (EC)

# DPF Activities to Prepare for Next Snowmass

Year	Activities
2017	<ul style="list-style-type: none"><li>• Presentation / Discussions, DPF Meeting at Fermilab</li></ul>
2018	<ul style="list-style-type: none"><li>• Contributions to the European Strategic Update</li></ul>
2019	<ul style="list-style-type: none"><li>• Town Hall Meeting, APS April Meeting in Denver</li><li>• Presentation “Perspective on the European Strategy Update from the Americas”, Open Symposium, Granada, Spain</li><li>• Presentation / Discussions, DPF Meeting at Northeastern U.</li></ul>

# 2017 DPF Meeting at Fermilab

- Presentations and panel discussion
  - Covering the current status of the U.S. particle physics strategy and the plan for the updated strategy
- Consensus
  - The current U.S. program has been guided by the strategic plan laid out in the 2014 P5 report. This P5 plan was based on a year-long community-wide study, Snowmass 2013, organized by the DPF, and a nearly year-long P5 process for which the Snowmass study report was the primary input.
  - The P5 plan has met success in the community, the agencies, and the stakeholders, and defines the U.S. program that is currently being executed.
  - The right time to initiate the studies for an update to the strategy for the U.S. particle physics program would be sometime after the CERN Council has adopted European Strategy (May 2020). The next Snowmass studies could be 2020 and 2021.

# DPF Contributions to European Strategic Update

July – December 2018

# DPF EC's Message to the Community

(July 18, 2018)

Dear colleagues,

The European particle physics community is preparing its updated strategy. The formal opening of the process will begin with appointments of two groups by the CERN Council in September 2018: the European Strategy Group (ESG) will establish the updated draft of the strategy and the Physics Preparatory Group (PPG) will prepare the scientific contribution to the work of the ESG via the "Briefing Book", which is based on the input it gathers from the world-wide community. One representative from the Americas will serve on the PPG. The CERN Council aims to adopt the updated strategy in May 2020.

# DPF EC's Message to the Community (cont.)

(July 18, 2018)

At the 2017 DPF meeting at Fermilab there were presentations and a panel discussion covering the current status of the U.S. particle physics strategy and the plan for the updated strategy. The current U.S. program has been guided by the strategic plan laid out in the 2014 P5 report. The P5 plan for the next decade of U.S. particle physics was based on a year-long community-wide study, Snowmass 2013, organized by the DPF, and a nearly year-long P5 process for which the Snowmass study report was the primary input. **The P5 plan has met success in the community, the agencies, and the stakeholders, and defines the U.S. program that is currently being executed.** A consensus was reached at the DPF 2017 meeting that the right time to initiate the studies for an update to the strategy for the U.S. particle physics program would be sometime after the CERN Council has adopted European Strategy. **The DPF is therefore considering 2020 and 2021 for the next Snowmass studies. Initial planning discussions are expected to take place at the April 2019 APS meeting in Denver.**

# DPF EC's Message to the Community (cont.)

(July 18, 2018)

DPF is planning to submit a short white paper to the ESG. We will be collecting input from the community in the August-September time frame for submission in December; more information will be forthcoming. Please send comments to [dpfstrategy@fnal.gov](mailto:dpfstrategy@fnal.gov).

# Preparation Schedule for DPF Contributions to ESG

Time	Process
July 2018	<ul style="list-style-type: none"><li>• Distribute a statement from DPF EC aligned to P5</li><li>• Identify editors for the white paper: 2 per category (1 theorist + 1 experimentalist)</li></ul>
Aug. – Sept. 2018	<ul style="list-style-type: none"><li>• Collect input from the DPF community via email <a href="mailto:dpfstrategy@fnal.gov">dpfstrategy@fnal.gov</a></li></ul>
October 2018	<ul style="list-style-type: none"><li>• Draft a white paper</li></ul>
Nov. – Mid Dec. 2018	<ul style="list-style-type: none"><li>• Circulate the DRAFT write paper / get feedback from the community (2-3 weeks)</li><li>• Finalize the write paper (~2 weeks)</li></ul>
Late December 2018	<ul style="list-style-type: none"><li>• Submit the white paper to the ESG</li></ul>

# U.S. Community Submission to ESG

- DPF white papers

- Developed by the DPF Executive Committee and the group of editors. Input was solicited from the community.
- Recent progress on the 2014 P5 recommendations
  - The 2014 P5 strategy has been tremendously successful
- Research interests in the U.S. community beyond the P5 timescale
- Activities within the U.S. and global communities on theory, accelerator development, computing, and detector R&D

APS Division of Particles and Fields Response to European  
Strategy Group Call for White Papers:  
Community Planning and Science Drivers

DPF Executive Committee and Strategy Whitepaper Editing Group  
dpfstrategy@fnal.gov

December 18, 2018

**Abstract**

This white paper describes the community strategic planning process organized by the DPF, and summarizes U.S. particle physics community input on activities and aspirations. This is the first of two documents, covering the five P5 Science Drivers.

(Input# 149) Progress on P5;  
Research interests beyond the P5 timescale

(Input# 150) Activities on theory,  
accelerator, computing, detector R&D

APS Division of Particles and Fields Response to European  
Strategy Group Call for White Papers:  
Tools for Particle Physics

DPF Executive Committee and Strategy Whitepaper Editing Group  
dpfstrategy@fnal.gov

December 18, 2018

**Abstract**

The U.S. particle physics strategy process is summarized in a companion white paper that also describes U.S. activities related to the five P5 science drivers. Additional activities within the U.S. particle physics program that are critical to progress in our field are described here.

# U.S. Community Submission to ESG

- Other individual submissions include:
  - Future Colliders
    - ILC (66, 77, 107), CLIC (145, 146), CEPC (29, 51), FCCee,eh,hh (132, 133, 135, 136, 140), HE-LHC (160)
  - Neutrinos
    - Deep Underground Neutrino Experiment, DUNE (123)
    - The Short-Baseline Neutrino Program at Fermilab (137)
    - Status of Fermilab's Neutrino Facilities (167)
  - Dark Matter
    - MAGIS-1K: A 1000 m Atom Interferometer Device for Searches in Dark Matter and Gravity Waves (161)
  - Flavor Physics
    - Charged LFV. using Intense Muon Beams at Future Facilities (25)
  - Electron-Ion Collider
    - Electron Ion Collider Accelerator Science and Technology - Designs, R&D and Synergies with European research in Accelerators (74)
    - Synergies between a U.S.-based Electron-Ion Collider and the European research in Particle Physics (99)

# Town Hall Meeting at APS April Meeting

5pm – 7pm

Saturday, April 13, 2019

# Town Hall Meeting (April 13, 2019)

- Agenda
  - Presentation:
    - US Strategic Planning Process, Andrew Lankford, UCI
  - Panel Presentation and Discussions with the Community
    - Theme:
      - Lessons Learned from Snowmass 2013
      - Comments on Timeline/Scope/Format for the Next Snowmass
    - Panel members:
      - Funding agencies: Glen Crawford (DOE), Saul Gonzales (NSF)
      - Snowmass 2013 Representatives: JoAnne Hewett (SLAC), Steve Ritz (UCSC), Bjoern Penning (Brandeis) representing Snowmass Young
      - DPF/DPB/DNP/DAP Representatives: Prisca Cushman (Minnesota), Michiko Minty (BNL), Karsten Heeger (Yale), Josh Frieman (Fermilab/U.Chicago)
- Consensus on the Next Snowmass
  - Time: starts in 2021 / ends in 2022 (Potential P5: 2022-2023, 2023 Report)
  - Format: ~year-long study to get engagement from a larger community

# Perspective on the European Strategy Update from the Americas (U.S., Canada and Latin America)



Open Symposium - Update of the European Strategy  
for Particle Physics

Presentation

May 15, 2019

Open Symposium, Granada, Spain

# Process in the United States

- P5 Strategic Plan for Particle Physics (2014)
  - 10 year plan in the context of a 20-year vision
  - 2012-2013: Snowmass community-wide studies
    - Organized by DPF (Similar to the PPG process)
  - 2013-2014: P5, Particle Physics Project Prioritization Panel
    - Subpanel of HEPAP, High Energy Physics Advisory Panel for DOE and NSF funding agencies
    - P5 takes the scientific input from Snowmass and formulates a strategic plan to address the science within specified funding constraints
- Long-Range Plan for Nuclear Science (2015)
  - Funded by Nuclear Physics Offices of funding agencies
  - Fundamental Symmetries and Neutrinos
  - QCD: Structure of Hadrons and Phases of Strongly Interacting Matter
- Decadal survey on Astronomy and Astrophysics (2010)
  - Dark Energy
  - Cosmic Microwave Background

# Particle Physics is Global

- The worldwide particle physics community can together address the full breadth of the field's most urgent scientific questions with each major player
  - hosting a unique world-class facility at home
  - and partnering in high-priority facilities hosted elsewhere
- Strategy planning in the global context

# Facilities in the Americas for the World Community



IceCube Neutrino Observatory in Antarctica

Facilities for accelerator science + R&D: ATF (BNL), FAST (FNAL), FACET (SLAC), BELLA (LBNL), AWA (ANL)

# Towards ESG 2020 (U.S.)

- Support of U.S.'s current plan
  - Importance of current high-priority projects such as HL-LHC, DUNE, ...
- Beyond mid-2020's
  - Scientific drivers of the U.S. current plan are still valid
  - More capable facilities and broader programs
  - R&D of enabling technologies for future (accelerator, detector and computing)
- Support of facilities and activities outside of Europe
  - DUNE/LBNF, CMB-S4, ....
  - A statement in the ESG document plays a significant role for success of facilities outside of Europe that serves the European / worldwide community (e.g. Neutrino statement from the 2012 ESG document → CERN's contribution to the LBNF/DUNE program in a substantial way. )
- The U.S. community
  - will continue with its strong partnership with Europe
  - would like to see positive steps toward a new collider (an e+e- collider might be the first one to be realized)

# 2019 DPF Meeting

August 1, 2019

Northeastern University

## **Presentation and Discussions on the next Snowmass:**

Inform the community the outcome of the April 13<sup>th</sup> Town Hall meeting  
Build a consensus on the structure (categories, pre-workshops, ...)

# Planning and Executing

