P5 Introduction & Process

Hitoshi Murayama and Karsten Heeger

- **Topics**
  - **Accelerator**
  - **Theory**
  - **Community Engagement**
  - **Underground Science**

- **463 registrants**
- **Zoom meeting, not webinar**
- **Recorded only for the panel, e**ncourage free discussions
- **Contributed remarks,** many from early career members

Meetings & Schedule

- **Open Town Halls**
  - LBNL, Feb 22-24, 2023
  - Fermilab/Argonne: March 21-23, 2023
  - Brookhaven: April 12-14 (just before DPF in Minnesota)
  - SLAC: May 3-5

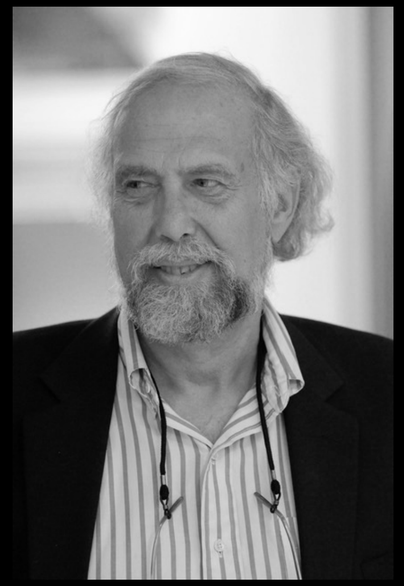
- DPF session on P5 (April 15)

- Virtual Town Halls in summer (additional opportunities for university engagement)

- Closed meetings
- Preliminary recommendations August
- Final report due October

Costs/Risks/Schedule Committee

- Formed sub-committee to better understand maturity of cost estimates
- Chaired by Jay Marx
- Will help P5 understand cost estimates and input to budget scenarios
- Work with large projects has started



Jay Marx

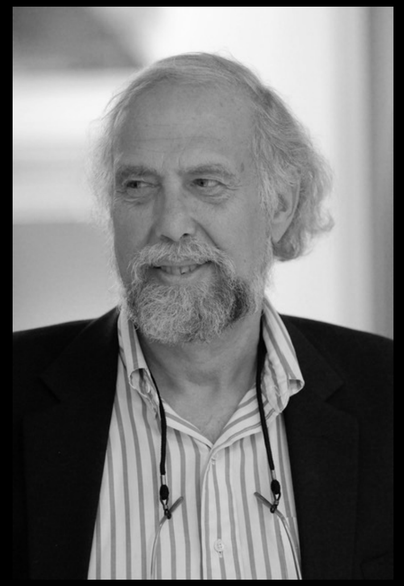
- Thanks to everyone who has responded to the committee in a timely manner!

Costs/Risks/Schedule Committee

- Jay Marx (Caltech, ret), chair

- Jonathan Kotcher & Srini Rajagopalan (BNL)
- Giorgio Apollinari & Douglas Glenzinski (FNAL)
- Allison Lung (JLab)
- Gil Gilchriese & Matthaeus Leitner (LBNL)
- John Seemam & Nadine Kurita (SLAC)

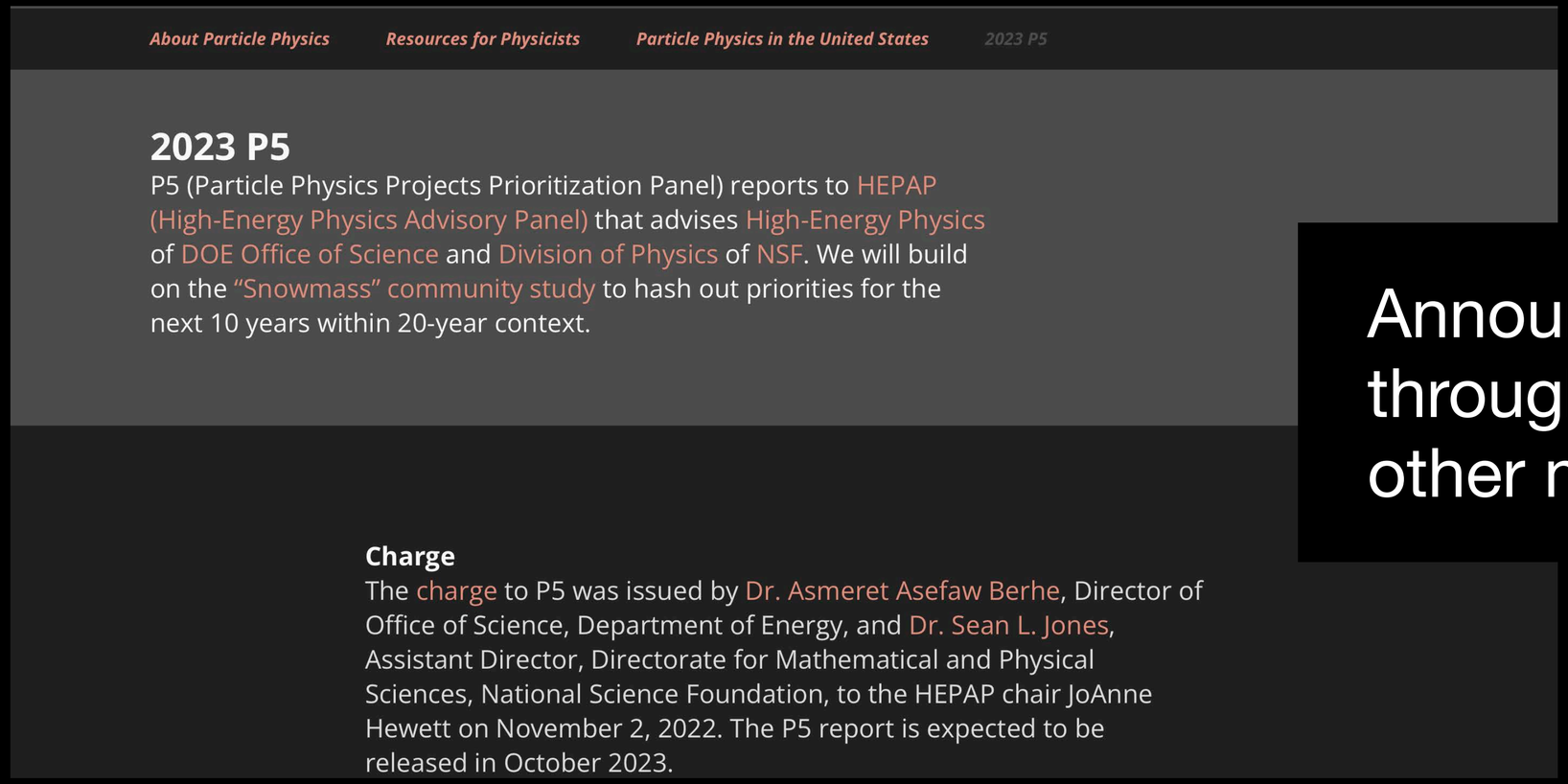
- Harry Weerts (Argonne, ret)
- Mark Reichanadter (SLAC, ret)



Jay Marx

P5 Communication

https://www.usparticlephysics.org/p5/



Announcements are also sent through DPF, Snowmass and other mailing lists

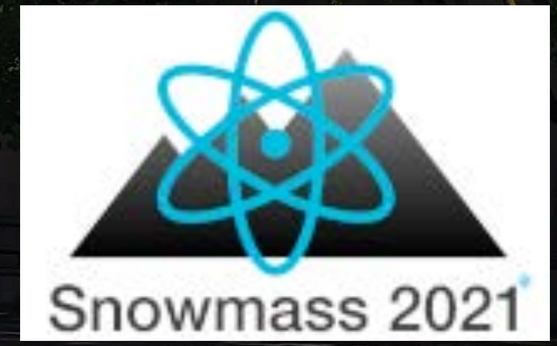
Key Elements of a Successful P5

- Well informed by the science community
- Set a grand long-range vision for U.S. particle physics
- Faced budget constraints realistically
  - "Community made tough choices."
- Balanced portfolio
  - Domestic and international
  - Small, mid-scale, and large projects
- Community engagement critical to success
  - "Bickering scientists get nothing."

Harriet Kung, Snowmass in Seattle

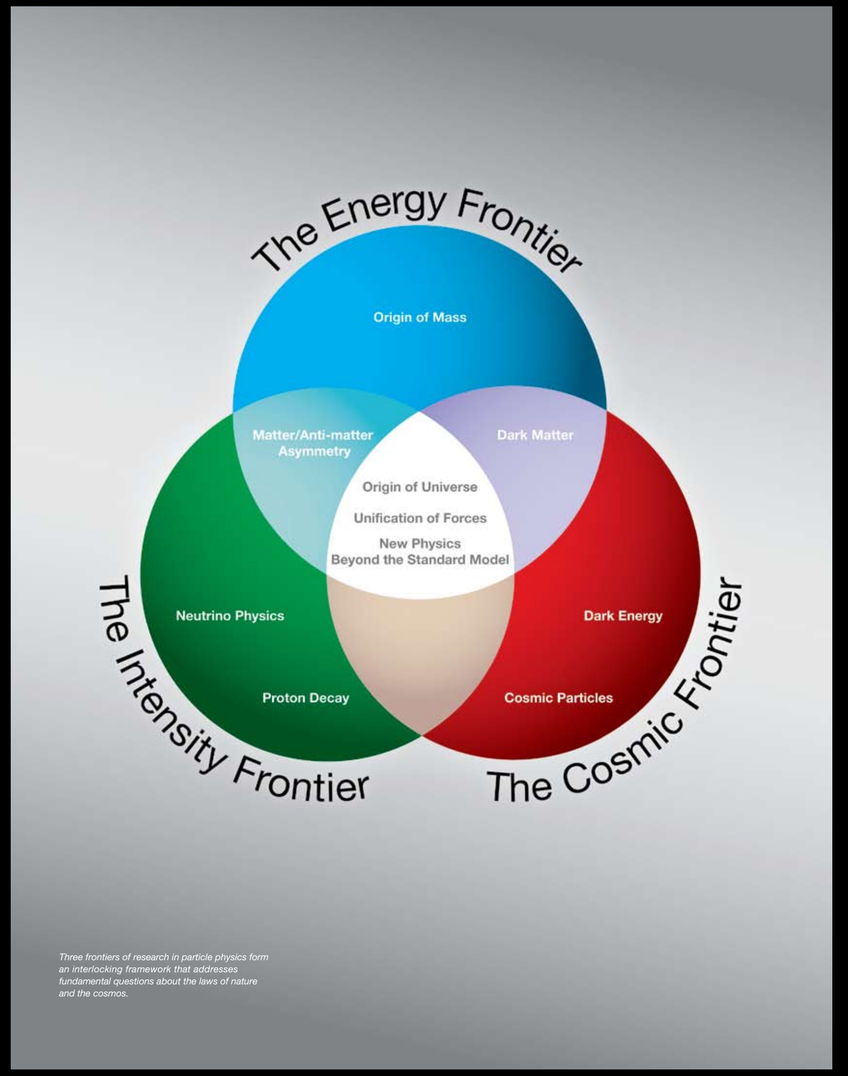
Take aways from Snowmass

- We have an exciting program
  - Thanks to Steve Ritz, previous P5, agencies!
- We are broader than the current program energy, intensity, cosmic
  - Where is the boundary of our field?
- We are a forward-looking community
  - We need program beyond what the previous P5 outlined
  - We also need more freedom
  - better balance big, medium, small; projects vs research
- We deeply care about our community
  - Diversity, equity, inclusion, outreach, engagement
- It’s a daunting task



2008 P5

- **2008 P5** (Charlie Baltay)
  - First “modern” P5 with budget scenarios and long-term vision
  - Energy, Intensity, Cosmic Frontiers
  - Tevatron for one to two more years
  - World-class neutrino program
  - Dark matter & dark energy, LSST
- ***US Particle Physics: Scientific Opportunities A Strategic Plan for the Next Ten Years***



2014 P5

- **2014 P5 (**Steve Ritz)
  - Use the Higgs boson as a new tool for discovery
  - Pursue the physics associated with neutrino mass
  - Identify the new physics of dark matter
  - Understand cosmic acceleration: dark energy and inflation
  - Explore the unknown: new particles, interactions, and physical principles.
- **Finally “got it right”**
  - Well received in Washington
  - Embraced CMB (inflation)
- ***Building for Discovery***

Building for Discovery: Strategic Plan for U.S. Particle Physics in the Global Context 18

Figure 1
Construction and Physics Timeline

Buil

Strategic

Project	2015	2020	2025	2030	2035
Currently operating					
Large Projects					
Mu2e					
LHC: Phase 1 upgrade					
HL-LHC					
LBNF					
ILC					
Medium and Small Projects					
LSST					
DESI					
DM G2					
DM G3					
CMB S4					

FIGURE 1 Approximate construction (blue; above line) and expected physics (green; below line) profiles for the recommended major projects, grouped by size (Large [>$200M] in the upper section, Medium and Small [<$200M] in the lower section), shown for Scenario B. The LHC: Phase 1 upgrade is a Medium project, but shown next to the HL-LHC for context. The figure does not show the suite of small experiments that will be built and produce new results regularly.

Report of the Particle Physics Project Prioritization Panel (P5) May 2014

Last P5 science drivers

- Use the Higgs boson as a new tool for discovery
- Pursue the physics associated with neutrino mass
- Identify the new physics of dark matter
- Understand cosmic acceleration: dark energy and inflation
- Explore the unknown: new particles, interactions, and physical principles.
- Still very much true
- Main aim: physics beyond the standard model

P5 takes input from the community and builds on the Snowmass process. P5 responds to specific charge. We will look at all options.

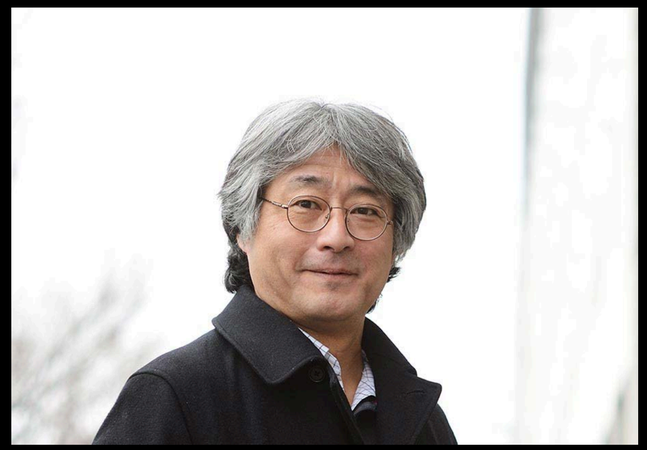
“Everything is on the table, nothing is off the table”

Considering Balance of the Field

- **Project vs research**
  - Large (>$200M), medium ($50-200M), small (<$50M) (previous P5)
  - Collection of small may be medium
- **Theory & Experiment**
- **Science vs R&D**
  - Instrumentation, computing, theory
- **National initiatives**
  - AI/ML, microelectronics, QIS
  - How do we capitalize on it? How can HEP contribute to these initiatives?
- **DEI**
  - What can agencies do?


P5 Panel

P5 Leadership



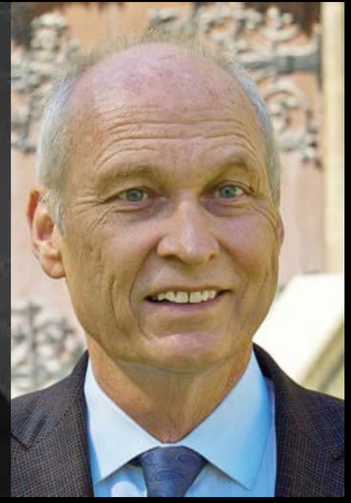
Hitoshi Murayama
P5 Chair

Karsten Heeger
Deputy Chair

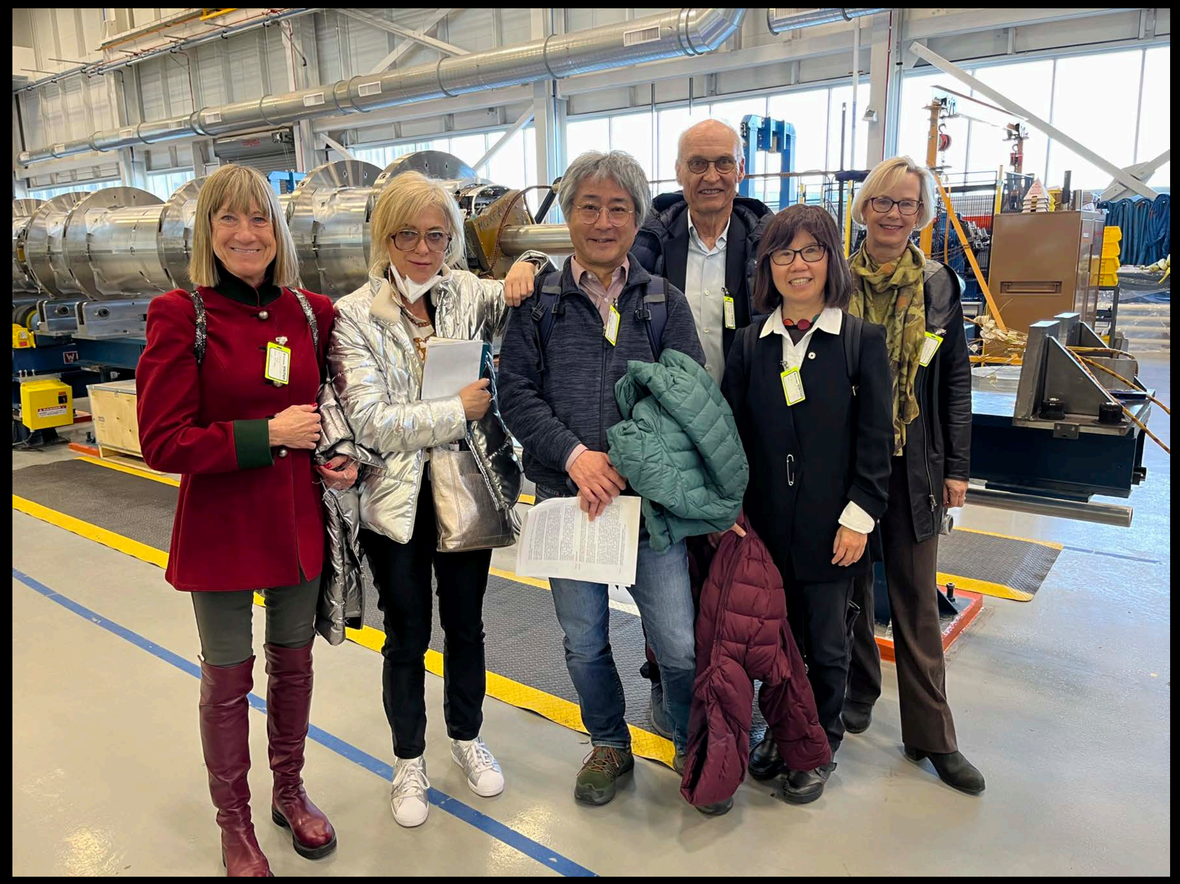
Thanks to outgoing HEPAP Chair, JoAnne Hewett!

DOE/NSF are working on identifying new HEPAP chair.

Interface with EPP2024



- EPP2024 looks into long-term vision, dreams, unconstrained by budget scenarios
- We invite all EPP2024 members to P5 town halls to make sure we get the same inputs from the community
- Will keep informing EPP2024 about our progress and vice versa
- Hopefully what we recommend will smoothly connect to their longer-term vision



Logistics/Reminder

- Please observe the community conduct (this also applies to the questions/comments in the Google doc)
- We ask speakers to observe time limit. Will be strictly observed. Need to leave time for Q&A.
- Online participants can raise their hand or leave questions in Google doc. P5 will look at all questions and may follow up offline with projects/speakers.
- Please introduce yourself with name and institution when asking questions.

Code of Conduct

Contact

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Code of Conduct

The P5 Town Hall at SLAC is a community event intended for collaboration and the exchange of their members' vision for the field, exciting science, projects and ideas. We value the participation of everyone and want all attendees to have an enjoyable and fulfilling experience. Accordingly, all attendees are expected to show respect and courtesy to other attendees and to abide by the following Code of Conduct. Any issues can be brought to the confidential attention of the organizers and we thank you for helping make these events welcoming and friendly event.

CODE OF CONDUCT

The community of participants of the SLAC Summer Institute is made up of members from around the globe with a diverse set of skills, personalities, and experiences. It is through these differences that our community experiences success and continued growth. We expect everyone in our community to follow these guidelines when interacting with others both inside and outside of our community. Our goal is to keep ours a positive, inclusive, successful, and growing community.

As members of the community,

- We pledge to treat all people with respect and provide a harassment- and bullying-free environment, regardless of sex, sexual orientation and/or gender identity, disability, physical appearance, body size, race, nationality, ethnicity, and religion. In particular, sexual language and imagery, sexist, racist, or otherwise exclusionary jokes are not appropriate.
- We pledge to respect the work of others by recognizing acknowledgment/citation requests of original authors. As authors, we pledge to be explicit about how we want our own work to be cited or acknowledged.
- We pledge to welcome those interested in joining the community, and realize that including people with a variety of opinions and backgrounds will only serve to enrich our community. In particular, discussions relating to pros/cons of various technologies, programming languages, and so on are welcome, but these should be done with respect, taking proactive measure to ensure that all participants are heard and feel confident that they can freely express their opinions.
- We pledge to welcome questions and answer them respectfully, paying particular attention to those new to the community.
- We pledge to be conscientious of the perceptions of the wider community and to respond to criticism respectfully. We will strive to model behaviors that encourage productive debate and disagreement, both within our community and where we are criticized. We will treat those outside our community with the same respect as people within our community.
- We pledge to help the entire community follow the code of conduct, and to not remain silent when we see violations of the code of conduct. We will take action when members of our community violate this code such as notifying a workshop organizer or talking privately with the person.

Questions/Comments

P5 Town Hall at SLAC

2-5 May 2023
SLAC
America/Los_Angeles timezone

- Overview
- Registration
- Call for Remarks in the Open Session
- Timetable
- GOOGLE DOC FOR QUESTIONS
- Participant List

P5 Town Hall with a focus on

Accelerator, Community Engagement, Theory, and Underground Science

P5 (Particle Physics Project Prioritization Panel) makes recommendations on the next 10 years of the US particle physics program within the 20 year context to HEPAP, which advises DOE and NSF. It builds on the extensive community involvement in the Snowmass study. This meeting is part of a series of town halls for information gathering for the panel to learn the aspiration of the community and basic ideas on costs and schedule of proposed projects.

Maximize Science!

Thanks to SLAC for hosting us!