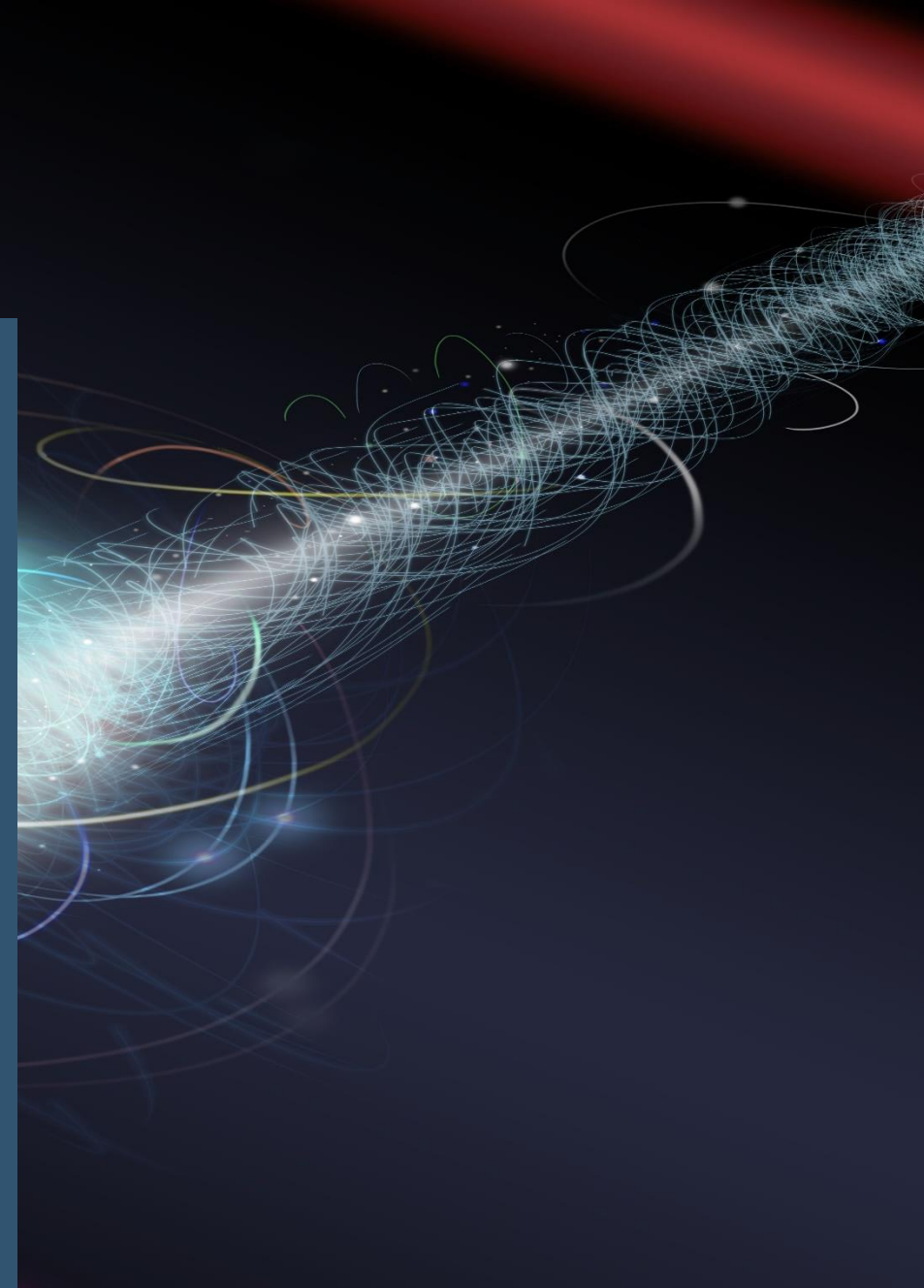


Elementary Particle Physics 2024: Progress and Promise

Committee on Elementary Particle Physics
Board on Physics and Astronomy

Dr. Maria Spiropulu and Dr. Michael Turner, EPP2024 Co-Chairs



Statement of Task from DOE and NSF

<https://www.nationalacademies.org/our-work/elementary-particle-physics-progress-and-promise#sectionWebFriendly>

The National Academies of Sciences, Engineering, and Medicine will convene an ad hoc committee to:

- Identify the fundamental questions in particle physics that could motivate research in the next decade and beyond, irrespective of the tools and techniques to address them.
- Distinguish which of these questions could be addressed with available experimental and theoretical tools in the coming decade and which could require new techniques or approaches.
- Suggest technical research areas that could provide particle physics with new tools needed to enable new techniques and approaches.
- Suggest different ways of thinking and alternative approaches from other areas of science that could be incorporated into and benefit the overall particle physics enterprise.

Unlike P5, the Committee will not prioritize projects nor consider budget as part of its deliberations.

Committee Membership

- Maria Spiropulu; *Co-Chair*, California Institute of Technology
- Michael S. Turner; NAS, *Co-Chair*, UCLA Visiting Professor
- Nima Arkani-Hamed; NAS, Institute for Advanced Study
- Barry C. Barish; NAS, California Institute of Technology
- John F. Beacom; The Ohio State University
- Philip H. Bucksbaum, (NAS) Stanford University
- Marcela Carena; Fermi National Accelerator Laboratory
- Bonnie Fleming; Fermilab/UChicago
- Fabiola Gianotti; (NAS); CERN
- David J. Gross (NAS); University of California, Santa Barbara
- Salman Habib; Argonne National Lab
- Young-Kee Kim (NAS); The University of Chicago

- Piermaria J. Oddone (NAS); Emeritus Fermi National Accelerator Laboratory/Lawrence Berkeley National Laboratory
- J. Ritchie Patterson; Cornell University
- Fulvia Pilat; Oak Ridge National Laboratory
- Chanda Prescod-Weinstein; University of New Hampshire
- Natalie Roe; Lawrence Berkeley National Laboratory
- Tim Tait; University of California, Irvine

Staff

- Daniel Nagasawa, Study Director
- Tarini Konchady, Deputy Study Director
- Colleen Hartman, Board Director
- Linda Walker, Program Assistant

EPP2024 in Context

- **P5** will prioritize projects in particle physics “over a 10-year timeframe in the context of a 20-year, globally-aware strategy for the field.”
Report to be released October 2023
- **EPP2024** will provide a vision and the approaches needed to achieve it over a much longer timescale (decade and beyond). Report to be released June 2024
- **Snowmass2021** provides crucial community input to both P5 and EPP2024. Final report released January 2023; Frontier Summaries and WG Reports also used.

DOE and NSF initiated P5 and EPP2024 with distinct charges.
We believe the two reports will benefit the field.

EPP2024 Timeline

July 2022: Seattle, WA

- Organize, meet with sponsors, attend SM21

November 2022: Irvine, CA

- Meet with P5, new DOE AD/HEP
- Information gathering

February 2023: CERN visit

March 2023: Fermilab visit

April 2023: NAS DC

- Information gathering

June 2023: Irvine, CA *

- Formulate findings, conclusions

September 2023: NAS DC *

- Formulate recommendations and make writing assignments

December 2023 (TBD): Irvine, CA *

- Review and consider the P5 report

Early 2024: Report sent to National Academy review *

June 2024: Report released

Additional activities

- Events (EC Town Hall, Academic Leadership Panels)
- Participation in the public activities of P5
- Monthly Committee Zoom meetings *
- Working Groups on special topics *

EPP2024: Highlights from November 2022 Meeting

- Discussion of EPP2024 charge with Regina Rameika, AD OHEP
- Discussion of P5 charge and activities with JoAnne Hewett (HEPAP Chair) and Hitoshi Murayama (P5 Chair)
- Presentations on the Snowmass synthesis of Cosmic, Theory, and Neutrino topics
- Particle Physics in China, Yifang Wang, Director IHEP

- Thought leader round table on elementary particle physics
 - Michael Witherell, Director LBNL
 - Lisa Randall, Harvard
 - F. Fleming Crim, AD/MPS and COO NSF (ret.)
 - Patricia Dehmer, Deputy Director Office of Science (ret.)
 - E. William Colglazier, Senior Scholar, AAAS
- Sustainability and Particle Physics Research, Frederik Bordry, CERN

EPP2024: Highlights from December 2022 Meeting

- Discussion with Particle Physics Project Prioritization Panel (P5) And High Energy Physics Advisory Panel (HEPAP) Chairs
 - JoAnne Hewett, Chair, HEPAP
 - Hitoshi Murayama, Chair, P5

- Large Accelerators Focused Session
 - Vladimir Shiltsev, Director, Accelerator Physics Center, Fermi National Laboratory
 - Sarah Cousineau, Section Head, Accelerator Science and Technology, Oak Ridge National Laboratory
 - Leonid Rivkin, Professor Emeritus, Paul Scherrer Institute
 - Dr. Thomas Roser, Senior Scientist Emeritus, Brookhaven National Laboratory Dr. Daniel Schulte, Senior Physicist, CERN
 - Dr. Mark Palmer, Director, Accelerator Science & Technology Initiative, Brookhaven National Laboratory

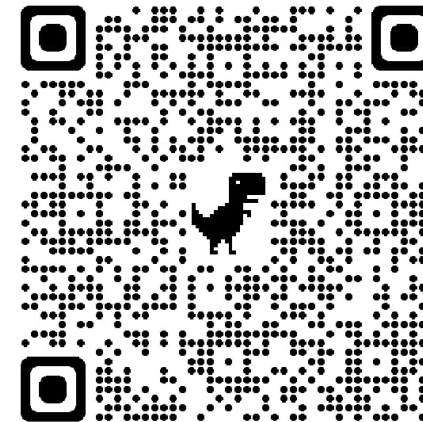
EPP2024: Highlights from January 2023 Meeting

- High Energy Physics Directors at National Laboratories
 - Kevin Burkett, Head, Particle Physics Division, Fermi National Accelerator Laboratory
 - Dmitri Denisov, Deputy Associate Laboratory Director, High Energy Physics, Brookhaven National Laboratory
 - JoAnne Hewett, Chief Research Officer, SLAC National Accelerator Laboratory
 - Nathalie Palanque-Delabrouille, Director, Physics Division, Lawrence Berkeley National Laboratory
 - Dr. Rikutarō Yoshida, Director, High Energy Physics, Argonne National Laboratory

Upcoming EPP2024 Events

- **22 February 2023 : P5 Meeting**
 - Co-Chair Presentation to the P5
- **20-21 March 2023 : Fermilab Visit**
 - Town Hall with Fermilab Scientists hosted by L. Merminga and FNAL Community
- **3-4 April 2023 : In-Person/Hybrid Meeting in DC**
- **18 May 2023 : Virtual Meeting**
 - Japan Panel with S. Asai, M. Yamauchi, and T. Kajita moderated by Barry Barish

See more information on our website <https://www.nationalacademies.org/our-work/elementary-particle-physics-progress-and-promise>



Thank You for your Attention