The National Academies of
SCIENCES • ENGINEERING • MEDICINE

DIVISION ON ENGINEERING AND PHYSICAL SCIENCES
BOARD OF PHYSICS AND ASTRONOMY

Committee on Elementary Particle Physics – Progress and Promise
Meeting No. 3
November 29-30, 2022
NAS Beckman Center, Irvine, California
ALL TIMES IN US PACIFIC STANDARD TIME (UTC-7:00)

This agenda is a draft, subject to change, and was last updated on 11/28/2022 6:52 PM

AGENDA

TUESDAY, NOVEMBER 29, 2022

OPEN SESSION

Livestream Link: https://vimeo.com/event/2574819

10:00 AM	**Welcome to the Meeting; Brief Remarks on Meeting Agenda**	***Dr. Maria Spiropulu, Co-Chair / Dr. Michael Turner, Co-Chair***
10:05 AM	**Discussion of Charge and Expectations of EPP-2024 with Dept. of Energy Office (DOE) of High Energy Physics (HEP)*** (30 minute presentation & 30 minute discussion period)	***Dr. Regina Rameika, Assoc. Director, HEP, DOE***
11:05 AM	*Short Break*	
11:20 AM	**Discussion with Particle Physics Project Prioritization Panel (P5) And High Energy Physics Advisory Panel (HEPAP) Chairs*** (15 minute presentation & 40 minute discussion period)	***Dr. JoAnne Hewett, Chair, HEPAP / Dr. Hitoshi Murayama, Chair, P5***
12:15 PM	*Break for Lunch*	
1:35 PM	**Cosmic Frontier*** (30 minute presentation & 30 minute discussion period)	***Dr. Tim Tait, EPP-2024 Member***
2:35 PM	*Short Break*	
3:00 PM	**Theory Frontier *** (30 minute presentation & 30 minute discussion period)	***Dr. Nathaniel Craig, Assoc. Professor, Dept. of Physics, U. of California – Santa Barbara***

*** Placeholder Title – To Be Updated Closer to Meeting Date**

4:00 PM	*Short Break*	
4:25 PM	**Neutrino Frontier*** (30 minute presentation & 30 minute discussion period)	***Dr. John Beacom, EPP-2024 Member***
5:25 PM	*Short Break*	
5:50 PM	**Particle Physics Plans in China*** (25 minute presentation & 20 minute discussion period)	***Dr. Yifang Wang, Professor, Institute of High Energy Physics, Chinese Academy of Sciences***
6:35 PM	**Day 1 Closing Comments**	***Dr. Maria Spiropulu, Co-Chair / Dr. Michael Turner, Co-Chair***
6:40 PM	*Meeting Adjourns for the Day (or at a time at the discretion of the Co-Chairs)*	

WEDNESDAY, NOVEMBER 30, 2022

OPEN SESSION

Livestream Link: https://vimeo.com/event/2574855

9:00 AM — *Committee Room Opens for Committee Members; Breakfast Served for Members and Staff*

9:55 AM — **Reconvening and Summary of Open Session Agenda for Today** — ***Dr. Maria Spiropulu, Co-Chair / Dr. Michael Turner, Co-Chair /***

10:00 AM — **Thought Leaders Roundtable Discussion**
(2-3 minute introductions & 95 minute discussion period)

Panelists:
Dr. E. William Colglazier, Senior Scholar, Center for Science Diplomacy, AAAS
Dr. Fleming Crim, John E. Willard and Hilldale Professor Emeritus, Dept. of Chemistry, U. of Wisconsin - Madison
Dr. Patricia Dehmer, Deputy Director, Science Programs, DOE (ret.)
Dr. Lisa Randall, Frank B. Baird, Jr., Professor of Science, Dept. of Physics, Harvard U.
Dr. Michael Witherell, Director, Lawrence Berkeley National Laboratory

11:50 AM — *Short Break to Retrieve Lunch*

12:00 PM — **Lunch Discussion: Sustainability and Particle Physics Research*** — ***Dr. Frédérik Bordry, Director, Accelerators and Technology, CERN***
(30 minute presentation & 30 minute discussion period)

1:00 PM — *Meeting Adjourns to Closed Session (or at a time at the discretion of the Co-Chairs)*

*** Placeholder Title – To Be Updated Closer to Meeting Date**

The following information is provided for any members of the general public who may be in attendance:

This meeting is being held to gather information to help the committee in its charge. This committee will examine the information and material obtained during this, and other public meetings, in an effort to inform its work. Although opinions may be stated and lively discussion may ensue, no conclusions are being drawn nor will recommendations be made. Observers who draw conclusions about the committee's work based on this meeting's discussions will be doing so prematurely.

Furthermore, individual committee members often engage in discussion and questioning for the specific purpose of probing an issue and sharpening an argument. The comments of any given committee member may not necessarily reflect the position he or she may actually hold on the subject under discussion, to say nothing of that person's future position as it may evolve in the course of the project. Any inference about an individual's position are therefore also premature.

NOTES FOR PRESENTERS

Your presentation may not include unpublished data, ITAR controlled and/or other sensitive information.

At some point a staff member will be asking you to sign a consent form allowing us to use your presentation, specifically to post it on our website.

STATEMENT OF TASK

Task Initiated on 25 August 2021

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.

Speaker Biographies

E. WILLIAM COLGLAZIER is Editor-in-Chief of Science & Diplomacy and Senior Scholar in the Center for Science Diplomacy at the American Association for Advancement of Science (AAAS). He served as the fourth Science and Technology Adviser to the Secretary of State from 2011 to 2014 to provide scientific and technical expertise and advice in support of the development and implementation of U.S. foreign policy. From 1994 to 2011, he was Executive Officer of the U.S. National Academy of Sciences (NAS) and the National Research Council (NRC) where he helped to oversee the studies that provide independent, objective scientific advice on domestic and international public policy issues. In 2015 he received the Joseph A. Burton Forum Award from the APS for "outstanding contributions to the public understanding or resolution of issues involving the interface of physics and society" and received the Order of the Rising Sun, Gold Rays with Neck Ribbon, from the Japanese government for "contributing to science and technology exchange and mutual understanding between Japan and the United States." Colglazier received his Ph.D. in theoretical physics from the California Institute of Technology.

F. FLEMING CRIM is the John E. Willard and Hilldale Professor Emeritus at the Department of Chemistry at the University of Wisconsin – Madison. Crim's research has dealt with the dynamics of reaction and photodissociation with the goal of understanding the essential features of chemistry in both gases and liquids. The unifying theme of this research is connecting chemical reaction dynamics occurring in gases to those in liquids. Crim has served on and led committees of the American Chemical Society (ACS) and the American Physical Society (APS), and he chaired the Board on Chemical Sciences and Technology of the National Academies. He served as assistant director of the National Science Foundation (NSF) where he led the Directorate for Mathematical and Physical Sciences, overseeing programs in astronomy, chemistry, materials research, mathematics, and physics and as the NSF chief operating officer for three years. Crim received a Ph.D. from Cornell University.

PATRICIA DEHMER was the deputy director of the Office of Science at the Department of Energy. As Deputy Director for Science Programs, Dehmer provided scientific and management oversight for the six science programs of the Office of Science, for workforce development for teachers and scientists, and for construction project assessment. During her tenure, she laid the groundwork for creating 32 new research centers to study transformative energy technologies. She also marshaled support for some $3 billion in investments in major research facilities for scientists to study high-temperature superconductors, next-generation silicon chips and biological proteins on the smallest scales. Dehmer spearheaded the reconstruction of a major laboratory at Stanford that provides extremely bright X-rays scientists use in research to probe matter on the scale of atoms and molecules. Dehmer is a fellow of the American Physical Society and the American Association for the Advancement of Science. Dehmer a Ph.D. degree in Chemical Physics from the University of Chicago.

LISA RANDALL is the Frank B. Baird, Jr., Professor of Science at Harvard University, where she studies theoretical particle physics and cosmology. Her research connects theoretical insights to puzzles in our current understanding of the properties and interactions of matter. She has developed and studied a wide variety of models to address these questions, the most prominent involving extra dimensions of space. Her work has involved improving our understanding of the Standard Model of particle physics, supersymmetry, baryogenesis, cosmological inflation, and dark matter. Randall's research also explores ways to experimentally test and verify ideas and her current research focuses in large part on the Large Hadron Collider and dark matter searches and models. Professor Randall earned her PhD from Harvard University.

MICHAEL WITHERELL is the Director of Lawrence Berkeley National Laboratory and Professor of Physics at UC Berkeley. Previously, he was Vice Chancellor for Research and held the Presidential Chair in Physics at the University of California, Santa Barbara. (UCSB). Dr. Witherell served as director of Fermi National Accelerator Laboratory (Fermilab), the largest particle physics laboratory in the country, from 1999 to 2005. From 1981 to 1999, he was a faculty member in the UCSB Physics Department. In 2004, he received the U. S. Secretary of Energy's Gold Award, the highest honorary award of the Department of Energy. Dr. Witherell is a member of the National Academy of Sciences and a fellow of the American Physical Society, the American Association for the Advancement of Science, and the American Academy of Arts and Sciences. He currently sits on the Committee on Science, Engineering and Public Policy at the National Academies. He received his Ph.D. from the University of Wisconsin, Madison.