

HEPAP SUBPANEL

On Long Range Planning For U.S. High Energy Physics

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HEPAP Presentation

HEPAP SUBPANEL

- Charge
- Membership
- Panel Activities
- Community Input
- Cross Disciplinary Contacts
- International Outreach

Web site:

http://hepserv.fnl.gov:8080/doehp/lrp_panel/index.html

CHARGE

With the completion of the Large Hadron Collider in the middle of this decade, the United States will no longer have a facility operating at the energy frontier, where critical discoveries are likely to be made.... Therefore, it is timely for the U.S. program to examine its long-term research directions and needs in terms of maintaining its traditional role among the world leaders in HEP research.

CHARGE

[We] are charging the subpanel to ... produce a national roadmap for HEP for the next twenty years.... [The] subpanel should weigh the scientific promise and programmatic importance of both accelerator and non-accelerator based efforts.... [The] plan should indicate what funding levels the roadmap would require (including possible construction of new facilities), and what the impacts and priorities should be if the funding available provides constant level of effort (FY 2001 President's Budget Request) into the outyears (FY 2002-2022).

1. MAJOR INTELLECTUAL CHALLENGES & SCIENTIFIC APPROACHES

What are the central questions that define the intellectual frontier of HEP? The reach of the subpanel's considerations should include the accelerator-based particle physics program, related activities in astrophysics and cosmology, theory, and the proper balance of these elements. Describe these questions in relation to the tools, existing and new, required to effectively explore them.

2. STRATEGY REGARDING THE ENERGY FRONTIER

The leading discovery tool in HEP in the 20th century, and as far into the future as one can see, is the energy frontier accelerator/ storage ring. In the context of the worldwide scientific effort in particle physics, formulate a plan that optimizes the U.S. investment of public funds in sustaining a leadership role at the high energy frontier, including a recommendation on the next facility that will be an integral part of the U.S. program.

3. MEETING TECHNOLOGY CHALLENGES

Identify technology developments essential for new instruments and facilities required to address the central questions noted above, and how these developments are captured in R&D plans. Explain the connection and importance of these R&D activities to the U.S. HEP program over the 20-year span of the plan developed by the subpanel.

4. BROAD IMPACTS AND INTELLECTUAL RENEWAL OF HEP

Summarize the wide-ranging impacts of the field on society; and recommend ways in which the excitement and the broad, long-term benefits of HEP can be maintained and conveyed to students at all levels, to society at large, and to government.

The report is due by the end of the year.

SUBPANEL MEMBERSHIP

We asked the community to suggest members. We contacted

- American Physical Society
 - DPF, DPB, DAP, DNP, TGG
- Users Organizations
 - FNAL, SLAC, BNL, Cornell
- Laboratory Directors

We received hundreds of nominations.

We tried to balance the membership

- Particle Physics – Astrophysics – Nuclear Physics
- Theory – Experiment – Accelerator
- Hadrons – Leptons
- High Energy – High Intensity
- University – Laboratory
- Age – Geography – Gender – Ethnicity

All members will be expected to look beyond their parochial interests and craft a plan for the good of the field as a whole.

SUBPANEL

Jonathan Bagger – Co-Chair
Johns Hopkins

Barry Barish – Co-Chair
Caltech

Paul Avery
Florida

Janet Conrad
Columbia

Persis Drell
Cornell

Glennys Farrar
NYU

Larry Gladney
Pennsylvania

Don Hartill
Cornell

Norbert Holtkamp
Oak Ridge

George Kalmus
Rutherford Appleton

Rocky Kolb
Fermilab

Joseph Lykken
Fermilab

SUBPANEL

William Marciano
BNL

John Marriner
Fermilab

Jay Marx
LBNL

Kevin McFarland
Rochester

Hitoshi Murayama
UC, Berkeley

Yorikiyo Nagashima
Osaka

Rene Ong
UC LA

Tor Raubenheimer
SLAC

Abraham Seiden
UC, Santa Cruz

Melvyn Shochet
Chicago

William Willis
Columbia

Fred Gilman (Ex-Officio)
Carnegie Mellon

PREVIOUS STUDIES

The subpanel will build on the work of previous studies, including

- 1994 Drell HEPAP Subpanel
- 1998 Gilman HEPAP Subpanel
- 1998 Winstein NRC Panel
- 2000 HEPAP White Paper

SUBPANEL ACTIVITIES

The panel will hear presentations of the scientific programs of the major U.S. laboratories, including

- Berkeley
- Brookhaven
- Cornell
- Fermilab
- SLAC

COMMUNITY INPUT

The subpanel will listen to the community at a series of Town Meetings. They will be held at

- Brookhaven (April)
- SLAC (May)
- Fermilab (June)
- Snowmass (July)

The community will also be invited to write letters to the panel.

CROSS DISCIPLINARY CONTACTS

The subpanel will meet with representatives of related fields, including

- Astrophysics
 - NRC Quarks to the Cosmos
 - Underground Laboratory
 - NASA
- Nuclear physics
 - NSAC

INTERNATIONAL OUTREACH

The panel will make contact with the international community during Snowmass. It will talk with the directors of

- CERN
- DESY
- KEK

It will also consult with ECFA, ACFA and ICFA.

THE PLAN

The end result of this process will be a plan for the future of U.S. high energy physics. It will

- Make the intellectual case for the field, in the broadest possible terms;
- Explain what it takes to address the scientific questions we face;
- Lay foundations for the global cooperation that the next machine will require;
- Generate a coherent plan for American particle physics in and beyond the LHC era.