Update of Snowmass2013

HEPAP Meeting (December 5, 2012)

Pierre Ramond (U. Florida) Chair, Division of Particles & Fields



Initiated by the DPF Executive Committee

Jonathan Rosner (U Chicago) Chair-Elect Ian Shipsey (Purdue) Vice-Chair Patricia McBride (Fermilab) Past Chair Alice Bean (Kansas) Treasurer Marjorie Corcoran (Rice) Jonathan Feng (UC Irvine) Kara Hoffman (Maryland) Yuri Gershtein (Rutgers) Lynne Orr (Rochester) Kate Scholberg (Duke) Nikos Varelas (U Illinois at Chicago)



Snowmass2013 Charge to Conveners

The American Physical Society's Division of Particles and Fields is initiating a long-term planning exercise for the high-energy physics community.

Its goal is to develop the community's long-term physics aspirations.

Its narrative will communicate the opportunities for discovery in high-energy physics to the broader scientific community and to the government.

originally anchored by two major meetings

CPM2012: Community Planning Meeting October 11-13, 2012 at Fermilab



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CPM2012: Community Planning Meeting October 11-13, 2012 at Fermilab

a successful spartan ecumenical meeting with more than 450 participants



BUT

US Government restrictions on meeting costs

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have forced the Snowmass2013 process to be broken up into a series of smaller interim meetings, ending with

CSS2013: Community Summer Study Meeting

July 29-August 6, 2013, University of Minnesota



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"Snowmass on the Mississippi"





More details can be found at

http://www.snowmass2013.org

Groups

All

Energy Frontier Intensity Frontier Cosmic Frontier Frontier Capabilities Instrumentation Frontier Computing Frontier Education and Outreach

Google Search

esnowmass2013.org ○WWW

Snowmass 2013 process

Community Planning Meeting 2012 (FNAL, October 11-13 2012)



Community Summer Study 2013 (Minneapolis, 7/29 - 8/6 2013) ("Snowmass on the Mississippi")



Focus areas & conveners

Energy Frontier: Raymond Brock (Michigan State), brock@pa.msu.edu, Michael Peskin (SLAC), mpeskin@slac.stanford.edu Intensity Frontier: JoAnne Hewett (SLAC), hewett@slac.stanford.edu, Harry Weerts (ANL), weerts@anl.gov **Cosmic Frontier**: Jonathan Feng (UC Irvine), jlf@feng.ps.uci.edu, Steve Ritz (UC Santa Cruz), ritz@scipp.ucsc.edu Instrumentation: Marcel Demarteau (ANL), demarteau@anl.gov, Howard Nicholson (Mt. Holyoke), hnichols@mtholyoke.edu Ron Lipton (FNAL), lipton@fnal.gov Frontier Capabilities: William Barletta (MIT), barletta@mit.edu, Murdock Gilchriese (LBNL), mggilchriese@lbl.gov Computing Frontier: Lothar Bauerdick (Fermilab), bauerdick@fnal.gov Steven Gottlieb (Indiana), sq@indiana.edu Education and Outreach: Marge Bardeen (FNAL), mbardeen@fnal.gov, Dan Cronin-Hennessy (UMn), hennessy@physics.umn.edu Special Advisor: Chris Quigg (FNAL), quigg@fnal.gov





The Higgs Boson

Precision Study of Electroweak Interactions

Fully understanding the top quark

The Path beyond the Standard Model, new particles, forces and dimensions

Quantum Chromodynamics and the Strong Interactions

Flavor Physics and CP violations at High Energies

- Jan 14–15, 2013 Princeton, Higgs Working Group
- Jan 14–16, UC Irvine, BSM Working Group
- Feb 18-20, Duke, Electroweak Working Group
- April 3-6, East Coast, General Meeting
- May 29-31, KITP- UCSB Theory Meeting (tentative)
- June 30 –July 3, West Coast TBD General Meeting





Quark Flavor Physics

Charged Lepton Processes

Neutrinos

Baryon number violation

New light weakly coupled particles

Nucleons, nuclei & atoms

- March 6–7 , SLAC, neutrinos (with Cosmic, DURA)
- April 18-20, ANL, General; with Project X?





Direct Detection of WIMP dark matter Indirect Detection of WIMP dark matter Non-WIMP dark matter Dark matter complementarity Dark energy and CMB Cosmic Particles and Spacetime Physics

- Jan 28-Feb 3, Aspen, Dark Matter Complementarity
- March 5-8, SLAC, with Capabilities, DURA(tentative)
- March 22–25, Snowbird, Non–WIMP dark matter
- May 13–17, KITP UCSB, "Hunting for Dark Matter"
- May 29-31, KITP UCSB, Joint CF/EF/IF





Sensors Gaseous detectors Detector Systems Electronics/DAQ/Trigger Novel Emerging Technologies Software

- Jan 9–11, ANL, CPAD Meeting
- April 17-19, Boulder, CPAD Meeting





Capabilities Frontier (accelerators)

Working Groups

Energy frontier hadron colliders Energy frontier lepton & photon colliders High intensity proton beams High intensity electron & photon beams Electron-ion colliders Technology test-beds & test beams

- Feb 21-22, CERN, high energy hadron colliders
- April 9-11, MIT High energy lepton colliders
- June 24–28, UC Santa Cruz, Writers meeting





Underground facilities with kiloton detectors

Underground facilities for dark matter experiments, neutrinoless double beta decay, etc...

- Jan 9-11, ANL, CPAD, underground facility needs
- March 5–8, SLAC, with DURA & Cosmic frontier
- May?, with Intensity Frontier







User-needs subgroups

Cosmic Frontier Energy Frontier Intensity Frontier Accelerator Science Astrophysics & Cosmology Lattice Field Theory Perturbative QCD

Infrastructure subgroups

Computing, including special purpose hardware Distributed Computing and Facility Infrastructures Networking Software Development, Personnel, Training

Data Management and Storage

- Nov 28 (half day), DC, with NERSC workshop
- Piggyback on Energy, Intensity, and Cosmic frontiers meetings
- TBD, CERN, Networking Workshop
- TBD, TBD, Data Management





Education & Outreach

Working Groups

The General Public

Policy Makers and Opinion Leaders

The Science Community

Teachers

Students

- March 16–17, Baltimore (APS) Teachers and Students
- April 12–13, Denver (APS) Community, Policy Makers, Community



"Snowmass on the Mississippi"...

... will provide an opportunity for discussion, analysis, and will arrive at conclusions for each area of the study.

By the end of this meeting, each set of conveners will have prepared an executive summary for their area, and overlap areas if necessary. Each subgroup will produce a report answering its charge and summarizing the discussion of its area throughout the process.

The ensuing electronic record, which may also contain contributed papers, will be an important resource for the community.

We anticipate that this long-term planning process will trigger an independent process of review and prioritization solicited by the funding agencies.



DOE's Perspective:

In 2008 HEPAP through the work of its P5 subpanel laid out a compelling strategic vision for the future of High Energy Physics.

Given recent exciting results at all the HEP scientific frontiers, and the ongoing evolution of budget projections and project plans, it is prudent to revisit the HEPAP/P5 plan with an eye towards examining the science options that have been put forward as well as emerging opportunities.

As a first step in this process, we need a strong scientific case that covers the range of opinion in the community. We would like to understand if our opportunities enable programs that are capable of achieving most or all of the scientific goals as the program considered in the 2008 roadmap, or whether some modifications to those goals and plans are needed.

To that end, a planning process that carefully considers the science opportunities and trade-offs involved, and can clearly elucidate the pros and cons of the various options, would be extremely valuable input for updating the HEP strategic plan.

Jim Siegrist, Associate Director, Office of High Energy Physics Office of Science, U.S. Department of Energy

DOE will initiate a P5 subpanel at the conclusion of Snowmass2013



Energized by their epochal discovery of a spin zero elementary particle

Tuesday, December 4, 2012

Particle Physicists strive to unravel Nature's mysteries for the good of mankind and benefits to society

Tuesday, December 4, 2012