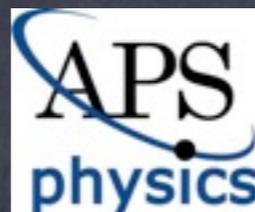


Road to Snowmass 2013

Roadmap to Discoveries

Presentation to HEPAP
Washington, March 13 2012

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



DPF Chair Line

Jonathan Rosner (U Chicago) Chair-Elect

Ian Shipsey (Purdue) Vice-Chair

Patricia McBride (Fermilab) Past Chair

elected by the Particle Physics Community

(High Energy Physics)

Speak for the Community

Articulate its Vision

Engage the Community

Snowmass Process:

Community Planning Meeting (CPM2012)

with plenary talks and time for discussion, to be held

October 11-13, 2012 at Fermilab

designed to provide important input and structure to the

Snowmass 2013 Meeting

June 2-22, 2013 in Snowmass CO

Five Particle Physics Frontiers

Cosmic Frontier

Energy Frontier

Facilities Frontier

Instrumentation Frontier

Intensity Frontier

Special Areas of Focus

widest possible representation in the planning process,

including junior faculty, postdocs, and students

computing, education/outreach, and diversity

interconnections between frontiers, with other APS divisions

and with the

International Community

Three conveners for each frontier:

(Intensity Frontier Workshop Model)

an experimentalist

a theorist (except for Instrumentation & Facilities)

an "outside observer" (to add perspective)

Conveners then organize subgroups along the same structure

(six in the Intensity Frontier Workshop)

Each subgroup should have at least one meeting before CPM2012

Half day at CPM2012 devoted to each frontier report and discussion.

CPM2012 outcomes:

no detailed writeup but a brief summary from each frontier to ensure success of the Snowmass planning exercise

Subgroups hold focused meetings between CPM2012 and Snowmass

Snowmass Meeting outcomes:

A writeup of some 25-30 pages for each of the five frontiers

**A community-driven
intellectual and practical
roadmap for US Particle Physics**

Why Now?

Why Now?

It's the Physics!

Why Now?

It's the Physics!

Cosmic Frontier

Dark matter experiments maturing,
on the verge of discovery

Energy Frontier

Evocative signals from LHC and Tevatron herald
the Higgs completion of the Standard Model

Facilities Frontier

LHC results may suggest the need for new accelerators

Instrumentation Frontier

Large-area planar photodetectors

Intensity Frontier

Neutrino mixing angles (Daya Bay) suggests another important source of
baryon asymmetry in the universe

What's Next?

What's Next?

Cosmic Frontier

new generation dark matter experiments

Energy Frontier

A low mass Higgs suggests a weakly coupled Standard Model at short distances, opening the way for supersymmetry and grand unification

Facilities Frontier

LHC physics will suggest the need for new accelerators
Neutrino beams and underground facility

Instrumentation Frontier

Large-area photodetectors

Intensity Frontier

Measurement of CP-violation in lepton mixing
Grand unification rekindles the search for proton decay

But ... Realities

Fermilab's Tevatron is shut down

The energy frontier has moved to Europe, with significant contributions from US physicists

For the first time since the Second World War there is no major particle physics project left on US soil
recurring budgetary uncertainties

Still, our programs continue to probe Nature's inner secrets
witness community enthusiasm at the Intensity Frontier Workshop

The US appears to be retreating from the
Basic Sciences Frontier

The US appears to be retreating from the

Basic Sciences Frontier

With the engagement of the Particle Physics Community,

the support and encouragement of the DoE & NSF,

we can keep the United States at the

Basic Sciences Frontier