Planning for Snowmass

Quark Flavor Physics Working Group

April 26, 2013

From H. Weerts, first day

Deliverables from Snowmass:	Time line
Each subgroup in each frontier will produce 30-50 page subgroup write-up	Draft by July 1
Each subgroup in each frontier will also produce a 5-6 page subgroup summary	Draft by start of Snowmass
Each frontier will combine subgroup summaries into ~30 page frontier write-up	Draft by start of Snowmass
Each frontier will also produce a 5-6 page frontier summary – base for final summary	Draft by end of Snowmass
The "Snowmass book" will consist of:	
The 7 frontier summaries (~7x30 pages) Overall summary (based on frontier summaries)	Draft by end of Snowmass + few days
	Present at DPF2013

Discussion during workshop

From H. Weerts, first day

Deliverables from Snowmass:

Time line

Each subgroup in each frontier will produce 30-50 page subgroup write-up **We will write one of these.**

Draft by July 1

Each subgroup in each frontier will also produce a 5-6 page subgroup summary **This will be the Executive Summary of our report.**

Draft by start of Snowmass

Each frontier will combine subgroup summaries into ~30 page frontier write-up

Draft by start of Snowmass

Each frontier will also produce a 5-6 page frontier summary – base for final summary

Draft by end of Snowmass

The "Snowmass book" will consist of:

The 7 frontier summaries (~7x30 pages)
Overall summary (based on frontier summaries)

Draft by end of Snowmass + few days

Present at DPF2013

Discussion during workshop

Snowmass Deliverables

- The Quark Flavor Physics working group will generate a report.
  - Likely length between 30 and 45 pages
  - Will follow an approach similar to that for the Heavy Quarks report from the Rockville IF workshop

- Individuals and groups are encouraged to submit Contributed Papers to Snowmass.
  - Experimental groups should probably take advantage of this opportunity.

QFP Snowmass Report

- Main goal is making a compelling case for this physics and the needed facilities/experiments.
- The report needs to be a coherent document
  - Co-conveners will exercise editorial control (like Rockville)
- Task Forces will provide brief reports (about 6 pages) as input.
  - The TF reports will form the “core” of the report.
  - Co-conveners will write introductory , connective, and concluding sections, as well as edit as necessary for consistency, …
- Drafts will be posted for community review and comment.
  - Similar to what was done for the Rockville report.

Report Timeline

- Snowmass organizers want
  - Complete drafts by July 1
  - Mature drafts by the beginning of Snowmass
  - Executive Summary by the beginning of Snowmass
    - Input to the 30-page Intensity Frontier Report
  - Final Report at end of Snowmass (hopefully a few days after)
- Working backwards, we need
  - Task Force reports by early June (dates to be set)
    - First drafts mid-May for coordination between TFs
    - Must begin soon.

Preliminary Outline

Any outline is tentative before actual writing has been done.

1 Quark Flavor Physics at the Intensity Frontier

- 1.1 Executive Summary . . . . . The story in a few pages
- 1.2 Quark Flavor as a Tool for Discovery . . . . . The physics case (subsections possible)
- 1.3 Update of the Heavy Quarks Report . . . . . TBD (e.g., changes such as SuperB decision)
- 1.4 Elements of a Quark Flavor Physics Program . . . . . .
  - 1.4.1 Kaons . . . . . Task Force report . . . . . .
  - 1.4.2 B-physics . . . . . Task Force report . . . . . .
  - 1.4.3 Charm . . . . . Task Force report . . . . . .
  - 1.4.4 The Role of Theory . . . . . Theory overview, and non-Lattice contribution . . . . . .
  - 1.4.5 Lattice QCD . . . . . Task Force report . . . . . .
- 1.5 Future Facilities and Experiments for Quark Flavor Whether needed depends on TF reps
- 1.6 A U.S. Plan for Quark Flavor Physics . . . . . .
  - 1.6.1 Opportunities in the Remainder of This Decade
  - 1.6.2 Opportunities in the Next Decade . . . . . .
  - 1.6.3 Conclusion . . . . . .

An attempt to sell a program of on-shore (FNAL) experiments and U.S. contribution to off-shore experiments.

Message for Snowmass

- Flavor physics probes far above the TeV scale.
  - An important complement to LHC.
  - Probes above the reach of LHC and other foreseeable machines.
- Existing facilities at Fermilab can support unparalleled rare K decay experiments (ORKA, and potentially others).
  - A cost effective way to mount quark-flavor experiments in **this** decade with significant potential to uncover new physics.
  - This opportunity is not open-ended (the world won't wait).
- Project X can open a new regime of sensitivity for rare K decay experiments in the next decade.
  - An order of magnitude beyond other kaon sources in the world.
- B-physics and charm physics will be led by non-U.S. programs for the foreseeable future.
  - These programs will do great physics.
  - The U.S. should be actively involved in these experiments.

- Questions for the Energy Frontier

- Questions for the Cosmic Frontier