Physics Software & Computing
US HFCC Level-2 Area

Lothar Bauerdick/Fermilab, Mike Hance/UC Santa Cruz
(Level-2 Managers)

Charge & Scope to the HFCC-PSC L2 working group

- Charge Item 4 to HFCC:
  - "Conceptualization of the software and computing framework that will be needed to advance physics studies and R&D efforts; and to collect, store, and analyze the large volumes of physics data at future collider experiments"
- Charge Item 6:
  - “**Ensure collaborations** by the U.S. with our partners are cost-effectively carried out to advance the future Higgs factory initiatives. (CPAD, ECFA, DRD, others)”
  - Should now add newly forming APS/DPF “Coordinating Panel for Software and Computing”

- Also, importantly,
  - provide infrastructure and computing resources in support of physics studies and R&D
  - provide software, computing, and user support to enable the US community to participate in and provide leadership to the future collider efforts

Physics Software & Computing

Dual mandate for this group:

- Development of Software and Computing resources for Higgs Factories
- Increasing engagement of US physicists in Higgs Factories through training opportunities

Current focus: identifying interested people/groups; developing resources for new users; and understanding where the US can/should engage more in existing international PS&C efforts

See kickoff meeting for more details on some specific target areas, including:

- Physics SW
- Core SW
- Computing

Goals for this week

- Understand the current status of ILC/FCC software and computing
  - Key4HEP software ecosystem
  - Relationship to LHC software
  - Existing/planned US efforts
- Identify PS&C-related challenges for detector groups
  - Joint session with AIM/TDAQ this afternoon
  - Plenary session on simulation studies at end of day on Thursday
- Plan the US/HFCC response to the ESG questions
  - Most of the day on Friday
- Connect with each other!

Session agenda

10:45 AM → 12:30 PM **Parallel: Physics Software & Computing** — 53/2-2002 - Berryessa

Conveners: Lothar Bauerdick (FNAL), Mike Hance (UCSC)

10:45 AM	**Introduction** **Speakers**: Lothar Bauerdick (Fermilab), Michael Hance (UC Santa Cruz)	5m
10:50 AM	**Key4HEP overview** **Speaker**: Juan Miguel Carceller (CERN)	30m
11:25 AM	**MC Generators for Higgs Factory studies** **Speakers**: Prof. Saptaparna Bhattacharya (SMU), Saptaparna Bhattacharya (Northwestern University)	20m
11:50 AM	**Core Software, from LHC to Higgs Factories** **Speaker**: Vakho Tsulaia (LBNL)	20m
12:10 PM	**Analysis Software in Key4HEP and beyond** **Speaker**: David Lange (Princeton)	20m

Backup

Proposed Organization

Level-3 areas:

- Physics Software
  - Software that directly supports physics studies, including generators, detector sim/digi/reco, and analysis software.
- Core Software
  - General Key4HEP software development, including GAUDI, support for alternative architectures, data formats and I/O.
- Computing
  - Development of computing resources to support national and international Higgs Factory activities. Grid computing sites for production jobs; analysis facilities for US physicists; HPC resources.