Energy Frontier Parallel Session
- summary -

Ulrich Heintz

Brown University

Energy Frontier Physics Working Group

Date: 17 Apr 15:20 – 5:30 PM

Place
Location: Duane Physical Labs, University of Colorado, Boulder
Address: Department of Physics Boulder, CO 80309-0390
Room: TBD

Conveners

Prof. Heintz, Ulrich (Brown University)

Timetable | Contribution List

Wed 17/04

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15:00

Introduction		Prof. Ulrich HEINTZ
TBD, Duane Physical Labs, University of Colorado, Boulder		15:20 - 15:35
Summary of e+e- collider white papers		Prof. Andy WHITE
TBD, Duane Physical Labs, University of Colorado, Boulder		15:35 - 15:50
Triggers for hadron colliders at the energy frontier		Wesley SMITH
TBD, Duane Physical Labs, University of Colorado, Boulder		15:50 - 16:05
Level 1 Track Triggers at HL-LHC		Dr. Ronald LIPTON
TBD, Duane Physical Labs, University of Colorado, Boulder		16:05 - 16:20
Tracker and Vertex Detector for a Muon Collider		Dr. Ronald LIPTON
TBD, Duane Physical Labs, University of Colorado, Boulder		16:20 - 16:35

16:00

we discussed

- whitepapers presented:
  - Andy White & Marcel Stanitzki: >60 pages collection of white papers on e+e- colliders
  - Wesley Smith, Ron Lipton: aspects of triggering for pp colliders
  - Ron Lipton: muon collider
- others:
  - Operation of Collider Experiments at High Luminosity
  - Noble Liquid Calorimeters
  - A Differential Time-of-Flight Technique for Collider Detectors
- identified some individuals to write EF summary
  - need to increase scope to encompass all approaches
  - need to maintain long-term vision beyond facilities that seem (semi) real
  - anybody interested in helping? contact me

we discussed

- challenges (focused on pp)
  - signals with low pT signatures
  - low signal:background
  - high occupancies
  - high rates
- need to
  - maintain trigger acceptance
  - mitigate pile-up
  - develop radiation hard detectors

we discussed

- what physics goals drive the technology
  - e.g. extended Higgs sector
    - need to measure Higgs coupling to % level
    - marginal with current detectors
- simulations
  - available from ATLAS/CMS collaborations
  - what are the assumptions made about detector performance?
  - did they take into account trigger effects?
  - ...
- need more communication with EF

questions for EF

- can you identify benchmark physics goals that push the technology of current detectors?
- which aspects of detector performance are critical for each of these?
- what is the performance that you are assuming for simulations?
- what improvements would be transformational for the physics reach?
- how important is the forward region?
- how important is high b-tagging efficiency at low pT/at high pT?
- what are the requirements for triggers?
- ...
- comments? additions? send me e-mail
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