

# **Remarks from the LHC session**

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## ● **HEP prospects**

1. exploration/clarification of strong dynamics. Open issues:
  - fwd properties: E flows, multiplicities, ....
  - origin of highest-multiplicity events, ridge, ....
  - low-x dynamics, PDFs, gluon saturation
  - pomeron dynamics (exclusive proc's, ....)
  - ....
  
2. MC modeling:
  - knobs and tunes, or are new dynamical regimes being exposed?
  
3. tool for exploration of new physics:
  - anomalous quartic couplings, exclusive H, ...

## ● **Remarks**

1. Role of “new physics” part of the programme crucial to ensure support. However running conditions to search for exclusive H may be very different than those to do exclusive  $J/\psi$  .....
2. overall picture of complementarity/synergy/reach of different detectors’ prospects still unclear (to me at least ...)
3. Useful to compile table(s) of processes, observables, kinematical ranges, etc, to compare reach of individual experiments
  - similar performance is good:
    - redundancy, cross-checks, ...
    - useful for several expts to share common goals, when it comes to plan special runs
  - Such cross-comparisons will help build a case for a role of the fwd/diff-ve physics programme in future runs, will help the internal approval process, and will help the LHCC review of such proposals
    - => need/desire to create a common forum for such discussions ?

## HEP vs CR aspects of the LHC fwd/diff<sup>n</sup> physics programme

- Seen from the perspective of an outsider, relevance to CR physics is great addition to the physics motivation for fwd physics at the LHC
- Issues:
  - $\sqrt{S}$  range of relevance ( => ok, see Engel's talk)
  - range of nuclear beams
  - Central vs forward: what's the  $y$  range of interest?
  - define list of key observables (inclusive  $dN/dN_{ch}$ ,  $dN_{ch}/dy$ ,  $dE/dy$ , ..., => full list?). How about diffraction, hard processes, .... ?
- What's needed to address these requests?
  - analysis of existing data enough?
  - post-shutdown data with currently proposed upgrades?
  - further detector/LHC upgrades?
- Can define benchmarks for performance goals?
- => let's see David's summary of CR session