Thanks to ECT* and Gennaro et al. for bringing all of us together in this wonderful place

Discussion session

Overview of machine R&D, Brian Foster
LHC QCD measurements, Ulla Blumenschein
QCD at future colliders, Frank Simon

QCD precision physics, Pier Francesco Monni
BSM with strong dynamics, Roberto Contino
Heavy ions: present and future, Gunther Roland

Pretty complete overview of the workshop!

QCD is everywhere

- Inspiring BSM (strongly interacting NP, axions)
- In the theory predictions (N^nLO, N^nLL, PDF, parameters)
- Generating background
- Shaping final states (fragmentation)

QCD today

- Impressive stream of measurements from LHC
- Modelling for hard interactions improving rapidly
- Is this also true for soft (non-perturbative) physics (UE, fragmentation, hadronization, pile-up)

  → interesting role lepton colliders and e-p colliders
- Extract global BSM constraints from complete set of measurements?
- How “completely different” is heavy ion physics?

QCD in the future

Judging from typical ILC/CLIC/FCC workshop there is some interest in α_s potential and quite a bit of top physics... Is that all?

Future of HEP

- Cheap cavities with G >> 100 MV/m and cheap magnets with

  B >> 16 T would make our life much easier...

  - Can we come up with a cost-effective globally optimized plan for the next collider and launch sufficient R&D for the next-to-next collider?
- Consensus needed at time that theory offers little guidance
  - Can we make general phenomenological statements about

    (strongly interacting) new physics?
- A lot of good work on future collider phenomenology, but thorough high-level comparison only available for Higgs physics
  - Can we do this for the European strategy? (2019)
- International collaboration needed at a time when propaganda & petty politics seems to prevail
  - Can HEP be an example?

Future of HEP (2)

- case for very-high-statics run at the Z pole and WW threshold

- alternative ideas for muon colliders

(e+e- —> mu+mu-)

Wanted: clear vision forward!