



**Physics and Phenomenology:
What's next?
General discussion**

Questions

- Do we want a single integrated physics story for FCC-ee, pp, and ep?
 - Seems natural for some physics targets, e.g. Higgs
 - To what extent is the ep physics case “in service of” the pp?
 - To what extent does ee “foreshadow” new states available at pp, versus covering differing parts of the BSM parameter spaces?
 - Should we think about an ee, ep, pp staging plan with physics milestones?

Questions for FCC-pp

- What are the main detector issues/trade-offs for FCC-pp?
 - Do we optimize for detection of very heavy particles?
 - What about boosted objects? (granularity etc)
 - Lower mass exotics? (triggers, scouting etc)
 - Higgs precision measurements? Which ones?

Questions for FCC-pp (and FCC-ee)

- What are the top ~ 3 flagship physics targets for FCC-pp?
 - It's good to have 50 things that you might do, but also need a high-level story
 - For LHC the story was Higgs + SUSY (as a proxy for the new physics of EWSB)
 - For FCC-pp I have heard several candidates:
 - Direct probe of the Higgs sector and EW phase transition (also with FCC-ee)
 - Test of naturalness
 - Dark matter
 - Search for new heavy particles
 - Getting closer to the “flavor scale”
 - SM in a new regime

Questions for FCC-pp

- How do we optimize the energy for FCC-pp?
 - Just accept 100 TeV as the largest round number we can imagine doing?
 - What about 30, 40, 60, 80 TeV?
- How do we optimize the luminosity for FCC-pp?
 - Staged approach, with different flagship physics at each stage?
 - What detector limitations to fold in?

Questions for FCC-pp

- More focus on new physics objects and SM at high energies?
 - Boosted everything
 - Resumming W,Z radiation?
 - Neutrino jets?
 - Are jets really the best physics objects?