

Minutes from the second roundtable discussion. July 3, 2026.

Transcribed by Felix Yu.

- Physics pillars should span Precision to NP/BSM. A Methodological Pillar and Conceptual Developments like EFT can serve as a Bridge. Should also include bridges to experimental physics and technological aspects of FCCee to help emphasize interdisciplinarity
- It's great to hear that CERN wants to be a strong partner. Need to use this partnership to the fullest extent. International partners is a plus to emphasize.
- Need to indicate ways that the Precision pillar is bigger. Could consider different graphical ways to make it clear that much more physics and projects would be contained in the Precision pillar.
- Focus on ways to emphasize interdisciplinarity. For example, multi-loop calculations have direct connections to mathematics and mathematical physics. Second, machine learning, artificial intelligence, and simulation pillar (including numerical techniques) can connect to data science. Also can consider a lattice theory pillar. Can also consider connections towards condensed matter.
- Should distinguish methodologies needed for FCCee compared to LHC.
- For flavor physics, hadronic quantities need lattice.
- Can also mention connections to cosmology and astrophysics. But we need a clear cut boundary to separate cosmology and astroparticle physics. It would probably be helpful to have a limited set of DM benchmarks but need to be careful, since a random DM model may not be a good selling point.
- Want to keep the argument that this SPP-funded research does *not* get done with SPP funding. (Affects the argument about connections to cosmology/astroparticle and connections to lattice.) Need to keep a clear focus on FCCee.
- Methods are generally lateral, pillars are generally vertical. Should construct a 2D structure to display.
- Example: Physics with jets - how does it fit the pillar structure? And how to show the BSM connections?
- Connection to cosmic rays and/or fragmentation functions from astroparticle Monte Carlo can transfer to FCCee - may be helpful to emphasize how FCCee measurements can *export* physics to other fields.

- Why we need more precision? Best argument is to go back to big questions.
- Need to keep in mind what will happen in the meantime before turn-on of FCCee. For example, connections to Gravitational Waves.
- Regarding timeliness and ambition (How to address "We have unsolved challenges in order to realize the precision we need and we need new breakthroughs in order to make progress) - if we don't start now, it won't happen. Aka "Will do our best. Must happen now." From the MITP workshop on EW corrections, we have methods that we know and have to push the limits, and we have gaps where we need new approaches.
- At the moment, there are still community members who calculated for LEP and we need to have the SPP now to maintain knowledge transfer.
- Breakthroughs are maybe optimal/ideal for PhD projects compared to postdocs. (Some differing opinions.)
- RTGs - can embed the SPP grad students into different respective graduate schools? Take advantage of promotion and structured programs, interface with local programs. Emphasize that SPP is different than RTGs by the scientific content.
- How to incorporate CERN? Clear that CERN does not have PhD students.
- For small places, we include networking meetings and possibilities for rotating network meetings.
- FCCee course online?
- Monte Carlo Theory Hub can be constructed to address responsible Data Management / Data Stewardship. Help keeps the FCCee legacy. Connect to NFTI.
- Finite mass effects become very complicated in loop calculations, necessity depends on what observable is being calculated. Can try to construct protocol to help advancements in precision calculations to be passed to experiment.
- For b quarks, some of what we need for FCCee will have overlap with LHC, including power corrections and shower corrections.