Comments & Issues

- We would like to thank the organizers for an interesting meeting!

- Comments concerning the overall scheme

- Comments on subsystem aspects

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Comments concerning the overall scheme

- Physics goals:
  - What is the highest priority? R? nucleon form–factors? Exclusive final states? Is it clear that the best detector for these goals is a general purpose detector?
  - What are the resolutions actually required to do the physics?
  - Modelling is impressive at this stage. However, it is not good enough to give confidence that the exclusive approach will work to the required level of precision.
  - Can a convincing case be made for obtaining a 3%, (2%, 1%?) measurement of R? Modelling must be carried through in enough detail to understand what the precision is likely to be.
  - We expect that a cross–calibration of the detector and simulation will need to be done on resonance (J/ψ).

- Backgrounds are crucial and must be understood very well. Extensive simulation must be started as soon as possible. The background situation will influence the acceptable detector configuration.

- Dipole vs. Solenoid:
  - Backgrounds play a critical role here. MD1 was a dipole detector that suffered from the 'wall of fire'. Don't commit to a dipole until backgrounds are understood.
  - Work with the machine people on both of these schemes to see which will give the best performance.
  - Operation of PEP–N with a dipole is not transparent to PEP–II operation, an initial constraint. Mitigation appears hard to implement.
  - If there is a dipole, there needs to be better control of the stray field on detector and machine components.
  - Additional dipole concerns: azimuthal dependence on tracking and triggering; non–uniformity of coverage?.
  - It is not clear that the alternative of a non–magnetic detector with a machine with crossing angle can't do this physics as well and more cheaply.

Comments on Subsystem Aspects

- ## Trigger:
  - A well understood trigger is critical to the R measurement.
  - A trigger based only on the calorimeter is unsafe. However, it is not clear how else to trigger.

- ## PID:
  1) Role and acceptance of PID: More complete simulation of physics could be helpful. A few examples: P vs Cos theta plots with acceptance overlays for golden channels would be useful to better understand acceptance roles played for various elements.How is optimization done? It could also be helpful to analyze channels with and without dedicated PID from aerogel. Another option might be cover up to 1.x p region with 60–70 ps TOF in forward region. Or maybe push aerogel index down if TOF from calorimeter is adequate.

  2) What is the expected PID performance of the TPC versus dip angle.

  3) What is the expected performance of the calorimeter got TOF. What is the length dependence? Is this affected by the one–end readout designs being considered?

  4) Are there fringe field issues with tube performance in Aerogel or TOF /CAL

  Question from a reviewer: Does this experiment need particle ID?

- ## Calorimeter:

  - Calorimeter technology choice looks fine. The energy resolution is acceptable. The excellent timing resolution is a very nice feature. The thinness of the backward and especially the pole calorimeter are worrisome (effects on efficiency and resolution: match the efficiency to the spectrum!). There will be a need to compensate for energy lost out the back of the thin calorimeters.
  - Spatial resolution should be tuned to the results of the background study. In particular, will backgrounds be a problem because of the long length of the counters. The spatial resolution should also be tuned for kinematic fitting (can compensate for thin calorimeters).
  - There are gaps in coverage in the calorimeter that should be eliminated. The backward calorimeter does not overlap well with the ends of the barrel and pole calorimeters. The median plane coverage for the backward calorimeter needs work.
  - The detector is all edges. Calibration across these gaps needs to be understood. Calibration for backward counters needs thought. Maintenance of calibration in the short–intermediate term between bhabha calibrations needs attention.
  - Instrument the pole tip steel.
  - Hadronic calorimeter?