Questions on Subdetector Calibration and Alignment

ILD Executive Team

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ILD needs to make progress on understanding the needs for calibration and alignment of the various subdetectors. This has come into focus recently in the context of the request from the ILC Parameters Group to better understand the need for "Z running for calibration".

We have prepared a response on the Z running issue that is focussed on the *relative* merit of some running at the Z for calibration and alignment. The draft document has been distributed separately on 18th July. It does not deal much with exactly how much data is needed to adequately calibrate and align the detector.

We would like to request input from the subdetector groups on the following questions that are important for evaluating the overall minimal calibration and alignment requirements of ILD.

QUESTIONS

1. Outline the strategy for alignment and calibration of your subdetector.
2. What calibration and alignment parameters need to be measured with particles (either from collisions or cosmics) for your subdetector?
3. What precision is needed on the calibration and alignment parameters for your subdetector? What is the basis for this assessment?
4. How many usable particles per sub-detector element are needed to establish the calibration and alignment constants at the above level of precision?
5. What particles and kinematic criteria are needed?
6. What is the smallest solid-angle subtended by an individual sub-detector element?

7. Does your subdetector plan to use power-pulsing?
8. Are cosmics useful for the alignment/calibration of your sub-detector?
9. Are beam halo muons useful for the alignment/calibration of your sub-detector?
10. If power-pulsing is used, what is the effective live-time percentage?
11. Is data with the magnetic field off needed for your sub-detector?
12. On which time-scales do you anticipate that the alignment and/or calibration of your sub-detector will be stable? In particular would it be reasonable to assume that data collected over multiple running periods in multiple years can be used collectively to refine the overall calibration or alignment?
13. Do you foresee particular challenges in the alignment and calibration of your subdetector?