

View on the proposed push-pull scheme of ILC detectors

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GLD detector concept study group

In this document, we try to express our view on the proposed push-pull scheme of the ILC detectors. The contents are based on the discussions made within GLD members and with outside experts.

Frequent and quick switch-over of two detectors is essential for the push-pull scheme in order to avoid loss of luminosity and to ensure fair and equal treatment of the two detectors. The push-pull task force, which was formed to address relevant technical issues, has presented its first report at the Valencia workshop. Many technical studies have been carried out by the task force and we very much appreciate their effort. However, we do not think that a convincing scenario for the push-pull scheme has been presented yet, due to the lack of time for sufficient engineering study.

As for the GLD concept, we do not have solutions yet for the critical issues specific to the push-pull scheme such as the support structure for the final quadrupole magnet compatible with nano-meter level stability, re-alignment of the sub-detectors, plumbing method for the “movable” cryogenic system for the super-conducting solenoid, etc. Furthermore, legal issues associated with the push-pull scheme, such as disconnection of the cryogenic system, will have to be clarified. The additional costs required for the push-pull scheme might not be negligible. These will include costs for a realistic design of the experimental hall, the apparatus for the detector movement, and the impact on the cost of the detector itself. These additional costs need to be estimated. In addition, the switching of detectors would be a complicated operation involving a large number of groups working together, and the scheduling issues need to be considered in detail.

Thus at present, we do not think we have enough knowledge to judge with confidence whether the push-pull scheme is feasible or not. We are willing to actively participate in the studies to make the push-pull scheme work. We are afraid, however, that accepting the push-pull scheme now, where its feasibility is not yet demonstrated with sufficient credibility, might later force us into a situation which is far from what we anticipate. We hope that the decision to adopt the push-pull scheme, which may be critical to the physics potential of ILC, is postponed until the feasibility is proven with some confidence.