FY07 ILC Statement of Work – WBS 3.10.5 ILC Accelerator Physics

The large crossing angle interaction region design still requires significant accelerator physics input in many areas. BNL staff experience and expertise in this kind of work is unique in regard to many aspects of the baseline hardware in the beam delivery system. This work has been on going for several years.

Work to be Accomplished in FY07

Perform magnet design and beam optics work for the large crossing angle (15/20 mr) IR layouts with special attention to the correction scheme and Machine Detector Interface (MDI); Develop designs for the Detector Integrated Dipole (DID), Anti-Solenoid and Tail-Folding Octupoles; Collaborate on Beam Delivery System (BDS) magnets for small crossing angle (2 mr) layout and the extraction and tune-up magnet for all crossing angles.

Relevance to the FY07 goals of the ILC Global Design Effort

The ability to reliably deliver high luminosity, accurately measure beam polarization and minimize detector background depends crucially on details of the final focus magnet system. Here we continue development of the large crossing angle IR magnet designs, look to elaborate the DID and Anti-Solenoid concepts for local correct inside the experimental detector and provide design resources for optimizing the BDS and BDS magnets for both the large and small crossing angle schemes. Also as the detector collaborations optimize their various detector concepts it is important to flesh out our own accelerator designs in order to understand MDI issues. We also look to make valuable contributions to the small crossing angle, the extraction and the tune-up beamline magnet designs while helping to optimize the large crossing angle IR optics and beam correction schemes and to provide requirements for the compact superconducting magnet prototype that will be constructed.

Key Milestones/Personnel

BDS and MDI Coordination at GDE/Valencia	November ‘06
BDS Magnet Meeting (tied to GDE meeting)	Spring ‘07 (date TBD)
BDS and MDI Meeting (tied to GDE meeting)	Summer ‘07 (date TBD)
Final Yearly Progress Report	October ‘07

WBS work package leader Brett Parker

FY07 Deliverables

Presentations at meetings. Information provided to GDE group responsible for updating the CDR and RDR. Final year end report.

Cost

Labor FTE's	Labor $K Direct	M&S $K Direct	Indirect costs $K		Total Costs $K
1.0	130	8	100		238

Labor consists of 0.75 scientific, 0.25 mechanical and cryogenic engineering