FY 2007 ILC Statement of Work – WBS 3.3.3.1 Photocathode Development for ILC SRF Gun

Work to be accomplished in FY 2007

This will be the first year of a 3-year R&D program with the goal of building and testing a prototype SRF gun for the ILC. MIT-Bates will work with AES Inc. in the design of the preparation chamber and load-lock chamber for the SRF gun. In addition, MIT will design the load-locked gun with preparation chamber which is required for the photocathode tests at Bates. MIT will ensure the full compatibility of the two systems and design the system of manipulators that would allow transporting the cathodes from MIT-Bates to BNL without exposing them to the air. The construction of the gun will start in FY 2007. MIT will design a transmission polarimeter to be used with the ILC gun. Photocathodes suitable for the initial tests will be procured.

Relevance to the FY 2007 goals of the ILC Global Design Effort

This program is an element of an R&D program on a superconducting RF photoemission gun to deliver polarized electron bunches at low emittance for the ILC with a high ratio of transverse emittance. RF guns are likely to provide better emittance beams, ideally good enough to eliminate the need for a damping ring. The ultimate emittance and quantum efficiency lifetime needs to be demonstrated.

Successful achievement of the FY 2007 goals will enable us to accomplish the test of the SRF gun by the end of this 3-year program.

Key Milestones/Personnel

Conceptual design	January 2007
Design of the preparation chamber	March 2007
Design of the load-locked gun for Bates	August 2007
Design of transmission polarimeter	August 2007

WBS work package leader Evgeni Tsentalovich, MIT

FY 2007 Deliverables

Completed designs for both Bates and BNL systems

Cost

Labor FTE's	Labor $K Direct	M&S $K Direct	Indirect costs $K		Total Costs $K
1.75	240	35	205		480

Labor consists of 1.0 FTE scientist and 0.75 FTE engineer