

DATE: March 3, 2006

Memo

TO: RHIC E-Coolers

FROM: Ady Hershcovitch

SUBJECT: **Minutes of the March 3, 2006 Meeting**

Present: Ilan Ben-Zvi, Wolfram Fischer, Harald Hahn, Ady Hershcovitch, Dmitry Kayran, Jorg Kewisch, William Mackay, Thomas Roser.

Topics discussed: Meetings at DOE, RHIC E-Cooler Location, Computations and Simulations

Meetings at DOE: in answer to Thomas, Ilan opened this meeting with a report on meetings he had attended at DOE. At the DOE meeting great interest was shown in RHIC and RHIC E-Cooling.

RHIC E-Cooler Location: Dmitry reported on his work on RHIC E-Cooler layout at the 2 o'clock intersection of RHIC. This new location was suggested by Joe Tuozzolo and Al Pendzick based on access consideration and the availability of power, water etc. Presently, the BRAHMS detector, which is scheduled to cease operation, is at the 2 o'clock location. Much of the infrastructure that serves BRAHMS could be useful for the RHIC E-Cooler.

Computations and Simulations: the meeting concluded with a report by Jorg on his optimization of electron bunch emittance. Jorg succeeded in reducing bunch emittance at the end of the first accelerating cavity to 2 mm-mR using laser distribution manipulations (from 2.8 mm-mR "beer-can" or 2.5 mm-mR elliptical). Optimization was performed with PARMELA coupled with Jorg's optimization program. Bunches were followed and parameters were optimized from the gun cathode to the end of the first accelerating cavity. 5.5 mm cathode diameter with tear-shaped bunch yields optimum results. There is till inconsistency with the IMPACT code, which Jorg is trying to reconcile. And, there are plans to compare the results to the electromagnetic code, with which Jorg is involved as PI in a SciDAC collaboration with SLAC. To Harald's question on the feasibility of attaining the optimum bunch shape, Ilan answered that a number of people are working on various possible schemes for such laser pulse shaping. To Wolfram's question about power loss due to manipulations, Ilan replied that the final stage could be amplification.