

*DATE:* April 4, 2003

Memo

*TO:* RHIC E-Coolers

*FROM:* Ady Hershcovitch

*SUBJECT:* **Minutes of the April 4, 2003 Meeting**

Present: Ilan Ben-Zvi, Xiangyun Chang, Ady Hershcovitch, Jorg Kewisch, Derek Lowenstein, William Mackay, Christoph Montag, Satoshi Ozaki, Stephen Peggs, Thomas Roser, Triveni Srinivasan-Rao, Dejan Trbojevic, Jie Wei.

Topics discussed: Deposition Chamber, Simulation & Calculations, 939 Setup.

**Deposition Chamber:** Thomas opened the meeting by asking about a reported deposition chamber problem. Ilan and Triveni reported that during bake-out one of the crucibles most likely overheated and material was probably sputtered on the walls. The background the pressure was in the  $10^{-10}$  Torr range. Triveni still is not sure as to the cause of the problem. It is possible that either a heating element is too close to the crucible, or that there was a malfunction by a heater controller. Further investigation is to take place after the safety walkthrough next week.

**Simulation & Calculations:** for a while Jorg has been reporting problems with his program. In today's meeting Jorg reported a breakthrough; the bug was corrected. The problem was that particle coordinates were taken in single precision from PARMELA, and then inserted into Jorg's matching routine that requires double precision. When particles were being traced from the solenoid gun exit into the cooling solenoid entrance, the matching routine was compensating for the conversion (from single to double precision) errors in a way that was actually causing emittance degradation. To rectify the problem, single to double precision is implemented at the gun solenoid exit. Although this procedure also introduces an error, the error remains fixed. And, the matching routine does not try to compensate for it.

Presently, Jorg has a cooling solenoid solution that has a 3-meter long matching section composed of 6 quadrupoles. It works with reversed field directions in the solenoids. Ilan and Thomas commented that this is an important result as it eliminates the need for a separate reversed solenoid to cancel the coupling introduced by a single solenoid. Christoph was asked whether this can be tested experimentally. His reply was affirmative, since phase space diagrams can be generated via a tomographic techniques.

Ilan also mentioned based on these and Xiangyun's simulations, it looks as if one could generate the desire cooling electron beam without the need for a stretcher. In answer to

Satoshi's question regarding the size of bunch length coming out of the gun, Ilan replied 3 cm.

**939 Setup:** in answer to Thomas' question, Ilan reported that Los Alamos received the money to develop our electron gun. Cathode and laser is development is to be done at BNL. Triveni, reported on the status the 939 setup. Mechanical assembly of the cryogenic system and of the ("not cleaned") RF cavity has been completed. Helium transfer system is close to completion. Next to be installed are the laser and the low level RF system. The purpose of the upcoming studies is to measure heat loss and low level RF frequencies.

The "clean" cavity will not be sent to be cleaned until its probes are assembled and tested. Cleaning will be done with the test probes assembled.