

DATE: November 18, 2005

Memo

TO: RHIC E-Coolers

FROM: Ady Hershcovitch

SUBJECT: **Minutes of the November 18, 2005 Meeting**

Present: Peter Cameron, Harald Hahn, Ady Hershcovitch, Dmitry Kayran, Jorg Kewisch, Vladimir Litvinenko, William Mackay, Christoph Montag, Thomas Roser, Dejan Trbojevic, Gang Wang (SUNY Stony Brook).

Topics discussed: Simulations and Computations, Machine Advisory Committee Meeting, ATF Electron Gun, Useful Data from Other Experiments, Ferrite Absorber

Thomas opened the meeting with a discussion on progress on a number of topics.

Simulations and Computations: in answer to Thomas, Jorg reported on simulations and computations he is doing in order to wrap-up Magnetized Cooling evaluation. In his simulations he is considering 20nC per bunch. Electron beam emittance requirement at the entrance of the cooling solenoid is 50 mm-mRad. At this point, simulations indicate that with present design the emittance is 52 mm-mRad. Jorg claimed that further optimization must be done to reduce the emittance by about 10%. A short discussion ensued regarding the causes for the present emittance results. Vladimir and Thomas pointed out that in his setup, Jorg is not using the latest gun technology. Also was discussed the International Linear Collider (ILC) superconducting electron gun, which has much higher brightness, for which there will be no need for emittance compensation.

Machine Advisory Committee Meeting: Thomas pointed out that a missing piece for the upcoming review of the Machine Advisory Committee Meeting is the RHIC lattice. Studies concerning lattice issues should commence. A short discussion ensued regarding lattice changes needed for electron beam cooling.

ATF Electron Gun: Vladimir described an extra electron gun that exists at ATF and magnets needed to test the zigzag merging beam concept.

Useful Data from Other Experiments: Vladimir pointed out that recent electron beam cooling experiments at FNL indicate that initially cooling works very well, but it is followed by a transverse instability. He suggested extending a talk invitation for someone at FNL to come to BNL to give a seminar on this subject matter.

Thomas mentioned that at CERN electron beam cooling experiments are in progress on Low Energy Ion Ring (LEIR) using an intense electron beam to cool O^{+4} ions with energy of 5 MeV/nucleon. Eventually, it will be used to cool lead ions. The electron beam density can have a radially varied profile. Presently it is semi-hollow designed to cool the tails. In this experiment Z^2 scaling can be tested.

Ferrite Absorber: Harald reported on an ongoing discussion with AES on the size of/and where to place the ferrite absorber at the end of the electron gun. Recently, the ERL system gun exit pipe was reduced from 24 to 10 cm (gun iris is 10 cm in diameter). The options are to use a gun ferrite absorber that is 10 cm and fits inside before the valve or outside, or to have a 24 cm ferrite absorber that is mounted outside, after the valve. Studies are underway to determine which option can provide for better HOM damping.