Paul trap collaboration meeting
11/5/2017

H. Okamoto, K. Ito, + students
S. Sheehy, S. Machida, D. Kelliher, L. Martin
+ S. Chattopadyay

1. David gave an update one experimental progress at IBEX.
   - We have not yet opened up the vacuum vessel to make any physical changes so noise etc.. issues still exist.
   - David presented:
     - Study of noise – which looks like it's partly arising from an oscillation in the DC ringing up and down the cable.
     - We probably need to shield the various cables inside the vacuum vessel - Hiroshima experience is that this will reduce the noise. They show in their slides some examples of the wiring/shielding inside the vessel.
     - Tested changing the fall-off time of the gate. The peak signal does not reduce linearly with time, but the integral remains about the same.
     - Ions vs tune
     - Voltage ramping

2. Lucy's presentation
   - Hiromi mentions that some non-linear effects are observed when there is a large offset. May need to take into account non-linearities when kicking to a large amplitude.
   - There may be decoherence, but Shinji mentions that as long as we are looking at beam loss, it shouldn't make much difference.
   - Could use a local bump instead – bump it out and then back again. Lose ions once and measure that.
3. Hiromi
   - Slides showing images inside the SPOD systems.
   - Working on plasma accumulation because Ca can be laser cooled to control tune depression over very wide range. Create Ca ions using atomic oven. In this geometry the trapping region is close to the FC. So there is a mesh shielding (tungsten, 80 mesh/inch) between the ER and the FC. Should be able to check the transmission efficiency of the mesh – should be about 80%.
   - They send the signal cable and the driving cables on opposite side of the trap. This may be because the drive/signal cable in IBEX case is too close.
   - In S-PODIII they wrap the FC end in aluminium foil
4. Hiromi – Nonlinear Trap
   - Hiromi showed results of the design of the nonlinear multipole trap. Can provide fields up to a few percent.
   - To get a stronger strength of multipole field, might need to have a different geometry with 8 rods
   - Their system has a normal quadrupole IR and then a section with nonlinear ER.
   - They will have it put together in a few weeks.

5. Swapan – Discussion
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