MI/RR R&D in FY12

Ioanis Kourbanis

10/25/11

MI/RR Issues /modifications

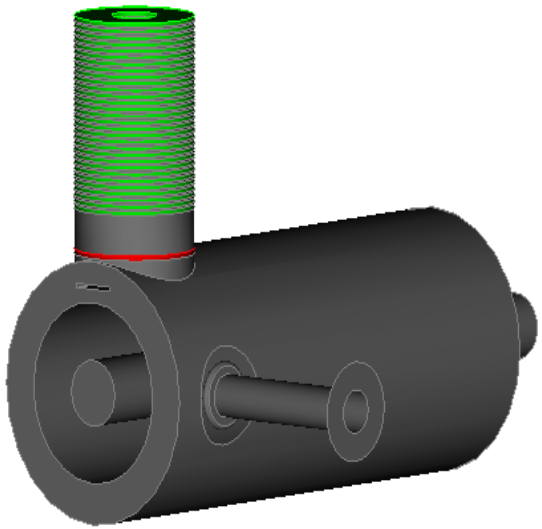
- Recycler lattice modifications
- H- stripping
- Space charge in MI/RR
- Electron cloud effects
- New rf systems (53&106 MHz)
- Transition crossing in MI.

Plan for FY12

- Continue the MI/RR Cavity Design effort.
- Coatings for e-cloud and SEY beam measurements.
- Space charge simulations and beam measurements.
- Rotating foil and laser stripping investigations.

New MI/RR RF Systems

- Continue the collaboration with SLAC on cavity design
  - Finish thermal simulations on 53 MHz cavity.
  - Start the design of the second harmonic (106 MHz) cavity.
- Build a mockup of the 53 MHz cavity for low level measurements.

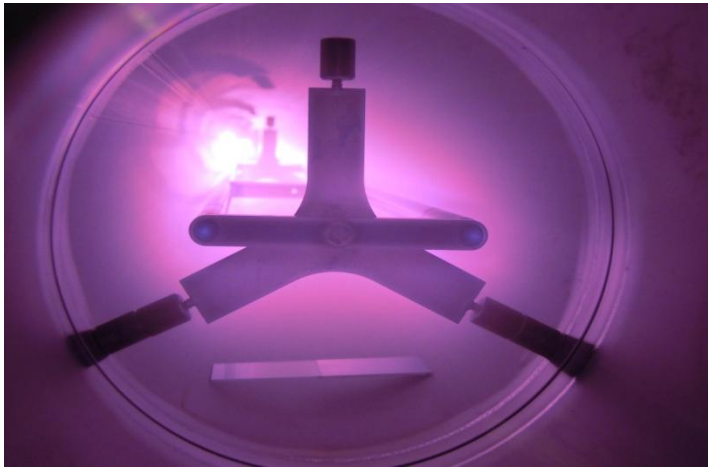


Cavity I with a coax input coupler

E-cloud (coatings)

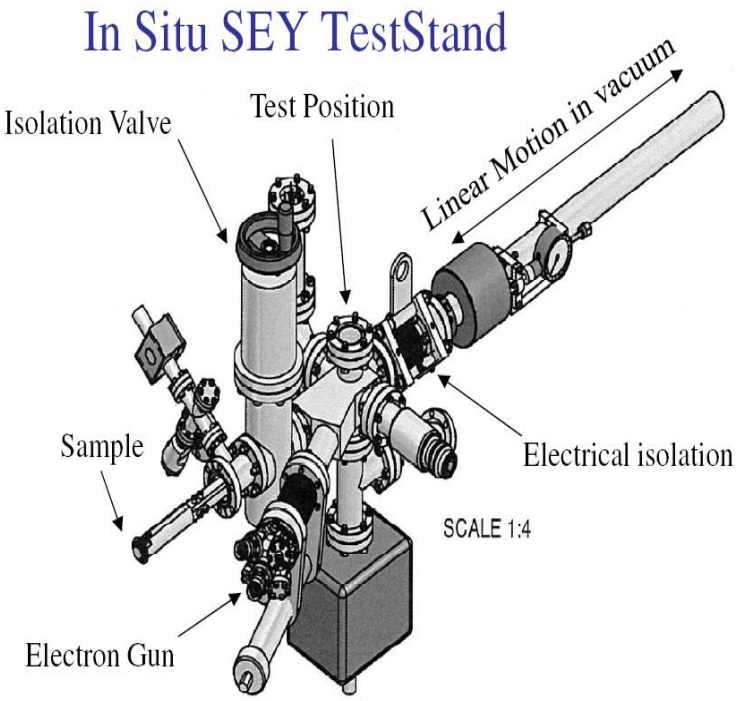
- Set up a coating facility (Sputtering)in E4R.
  - Coat a 6 m long piece of a round MI vacuum pipe with TiN (using the targets from SLAC) and measure the coating thickness
- Write a report outlining what it would take to coat in situ the MI vacuum pipe.

Coating set up in E4R



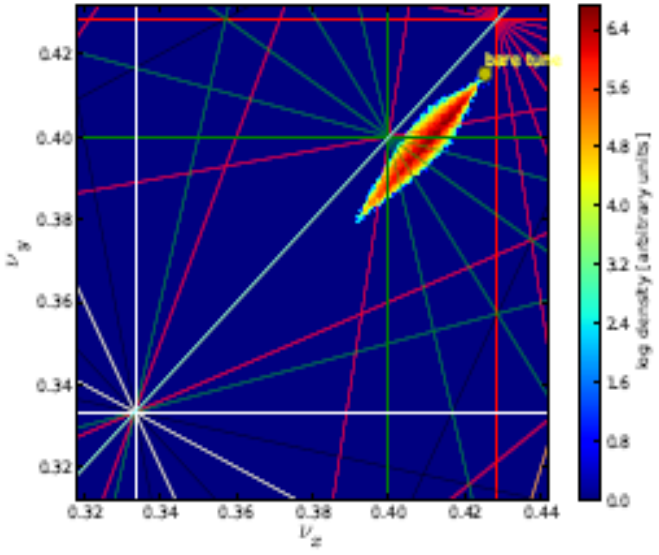
E-Cloud (Measurements)

- Perform SEY measurements (using SEY test stand from Cornell) in situ for different samples. Evaluate the effect of MI beam conditioning.



Space Charge

- Continue the simulations with SYNERGIA and IMPACT (LBNL).
  - Include realistic apertures and magnet multipoles.
  - Compare beam loss with beam measurements.
  - Continue beam measurements of tune scans at different bunch intensities.



Tune footprint with SC

H- Stripping

- Simulate rotating foil in particle tracking.
- Collaborate with Argon for building rotating foil prototype system.
- Start laser stripping investigations.