

Modular cavity installation and commissioning



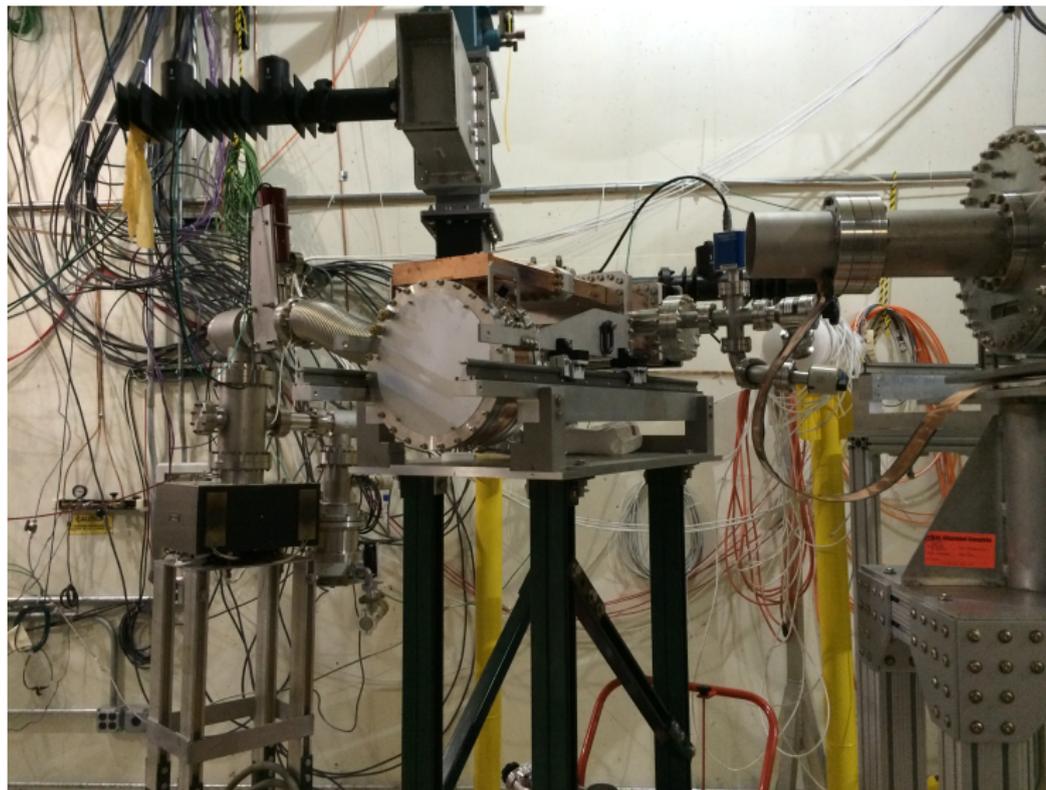
Daniel Bowring

MAP 2014 Winter Meeting

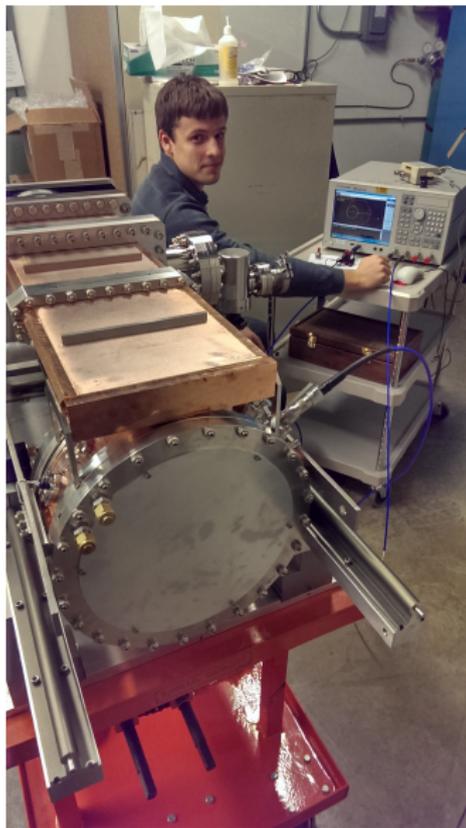
December 6, 2014



The modular cavity is in the MTA. This is a brief overview of recently completed and ongoing work.



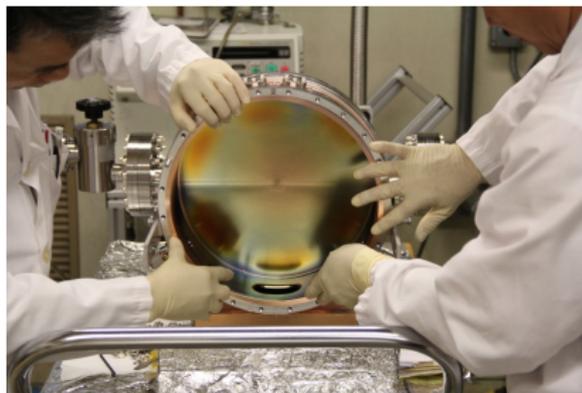
Alexey Kochemirovskiy is our new PhD student



- ▶ From U. Chicago. Academic supervisor is Young-Kee Kim.
- ▶ Successfully completed his thesis proposal: RF breakdown in strong magnetic fields.

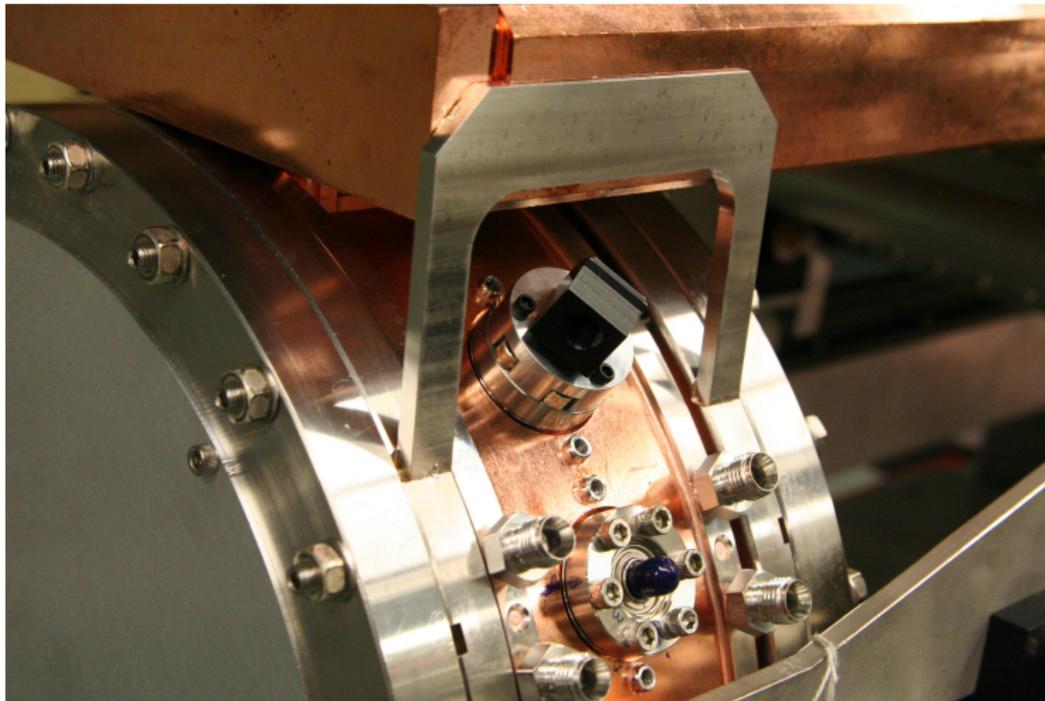
RF characterization

New RF gasket design resolves past issues with low Q -values.

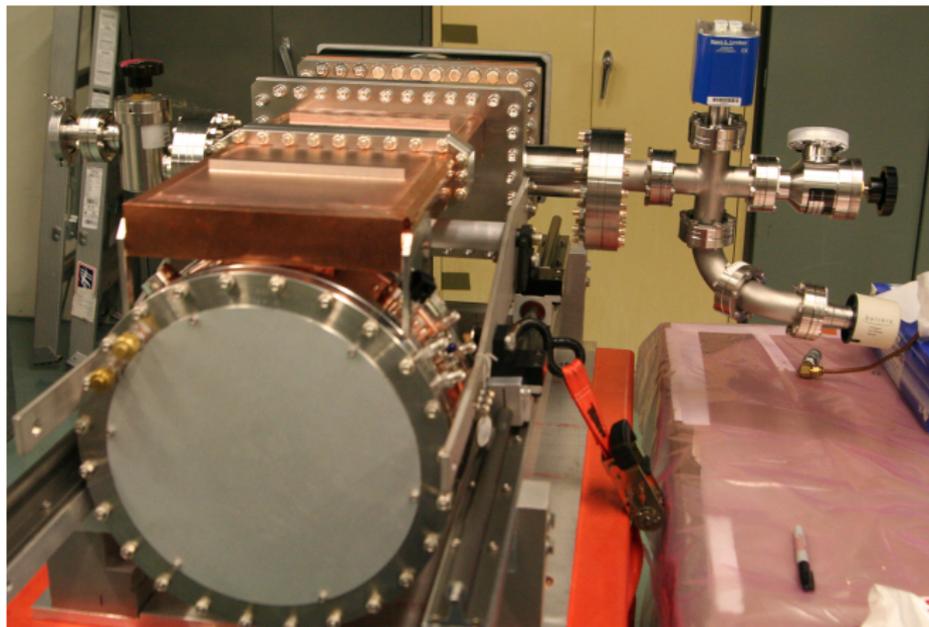


	Freq. (MHz)	Q_0	Q_L
Simulation	804.99	25602	11861
February	804.62	8500-14000	6000-9000
July	804.52	23445	10600

“Custom” optical ports for breakdown light detection & spectrometry installed in A0 clean room.

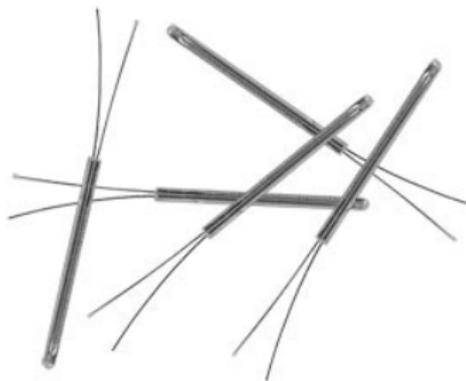


All vacuum components installed in A0 clean room.



Base pressure in MTA is ≤ 40 nTorr.

Instrumentation: RTDs for thermometry.



Omega 1PT100KN1515CLA, $T \pm 0.25^{\circ}\text{C}$
at 50°C .

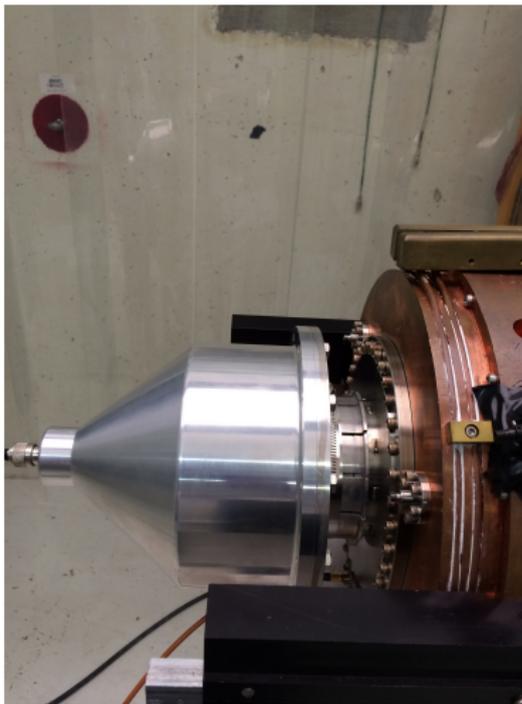
- ▶ Measure temperature differential across end wall.
- ▶ Monitor coolant channel temperature.
- ▶ In-hand. To be installed after this meeting.

Instrumentation: Microphones for acoustic spark localization



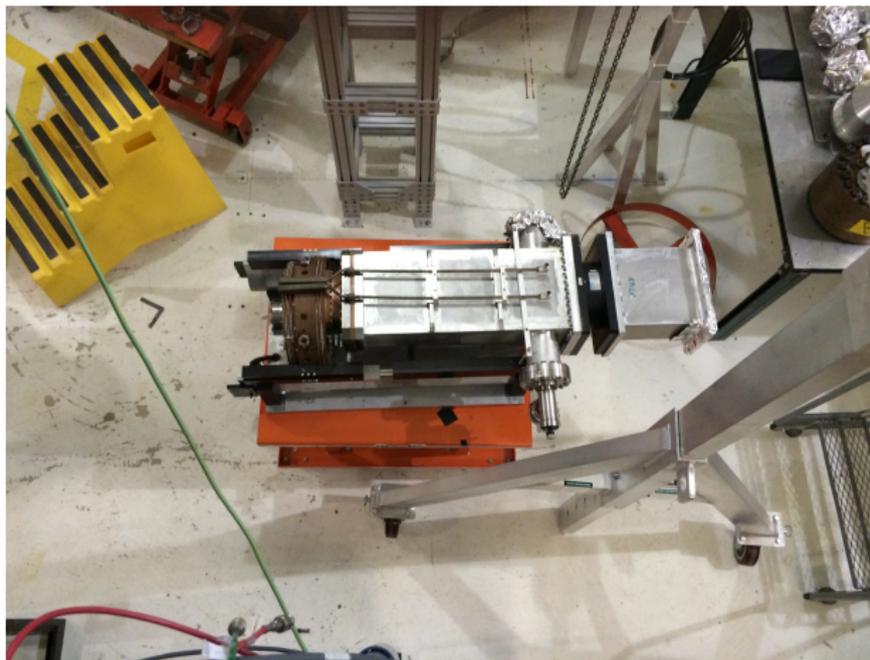
In-hand. To be installed after this meeting.
c.f. Peter Lane's presentation.

We already have a Faraday cup for dark current measurements.



Will be used in combination with beryllium end walls.

Old 805 MHz pillbox operated simultaneously with MICE cavity in MTA.

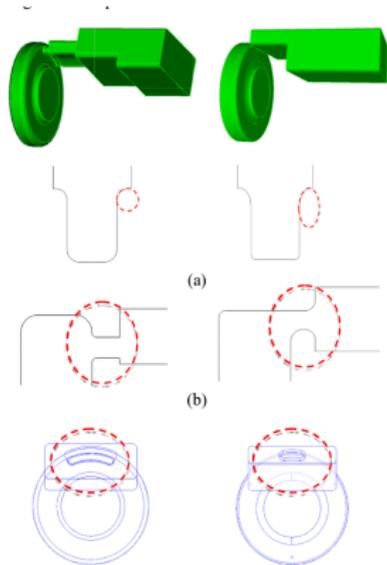


Demonstrates capability of run control systems to handle two cavities at once. Scheduling gets complicated for $B > 0$

What else needs to be done?

- ▶ Final plumbing of water lines
- ▶ Installation of RTDs, microphones
- ▶ Solenoid training
- ▶ Run control algorithm implementation and/or shifter training
- ▶ Spectrometer setup and analysis
- ▶ Constant coordination between 3 experimental efforts

Thanks for your attention!



Z. Li *et al.*, Proc. AAC 2012.