

Spectrometer Solenoid Prep Work at RAL and LBNL

MICE VC

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Topics

- Background Info
- Insulating vacuum
- Helium circuit
- Cryocooler compressors
- Cryocooler Update



Background Info

- Some tasks remained after 10/14 trip to RAL by LBNL techs (K. McCombs, A. Williams)
- Techs are currently at RAL from April 27th through May 8th (2 weeks)
- Goal is to get magnets fully operational and ready for cooldown
- Some work still to be completed at LBNL related to the cryocoolers



Vacuum

- Replace all four power feedthroughs on SS2
- Install manual 6" gate valves on each vacuum gauge tree
- Install vacuum burst disks on each magnet
- Install G-10 strain reliefs on vacuum side of power leads - both magnets
- Leak check after all vacuum work is completed

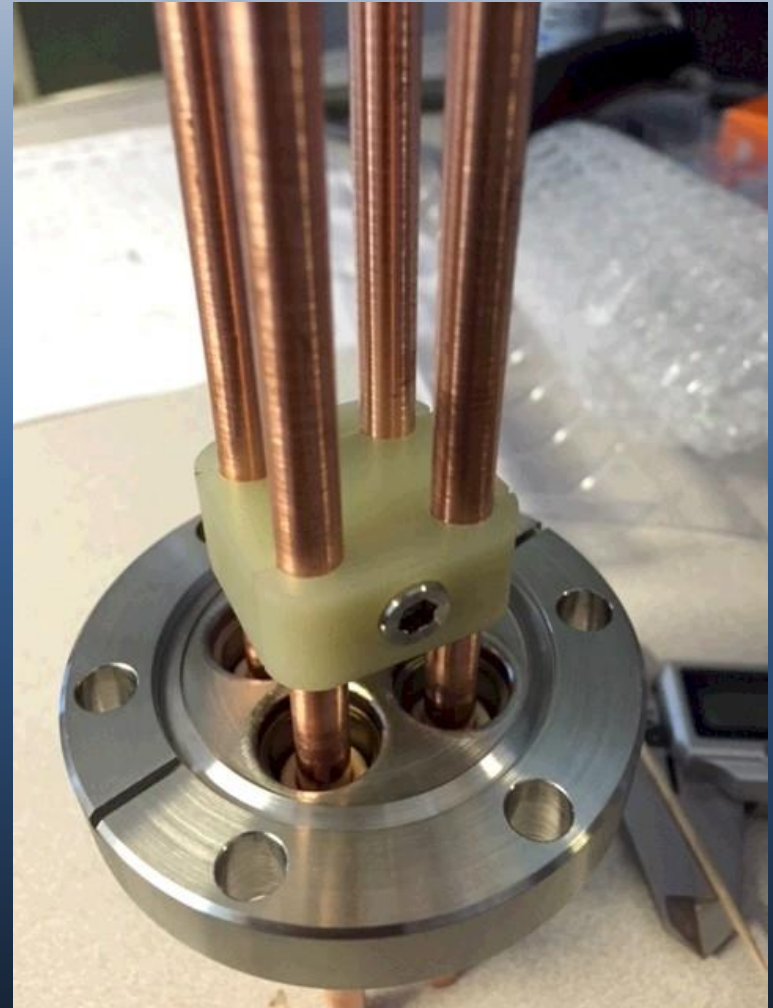


Ceramic Power Feedthrus



Feedthru Strain Relief

- Recurring damage to feedthrus likely due to forces from warm leads inside vacuum
- Custom made G-10 strain reliefs will prevent large moments from being transmitted to fragile ceramic insulation



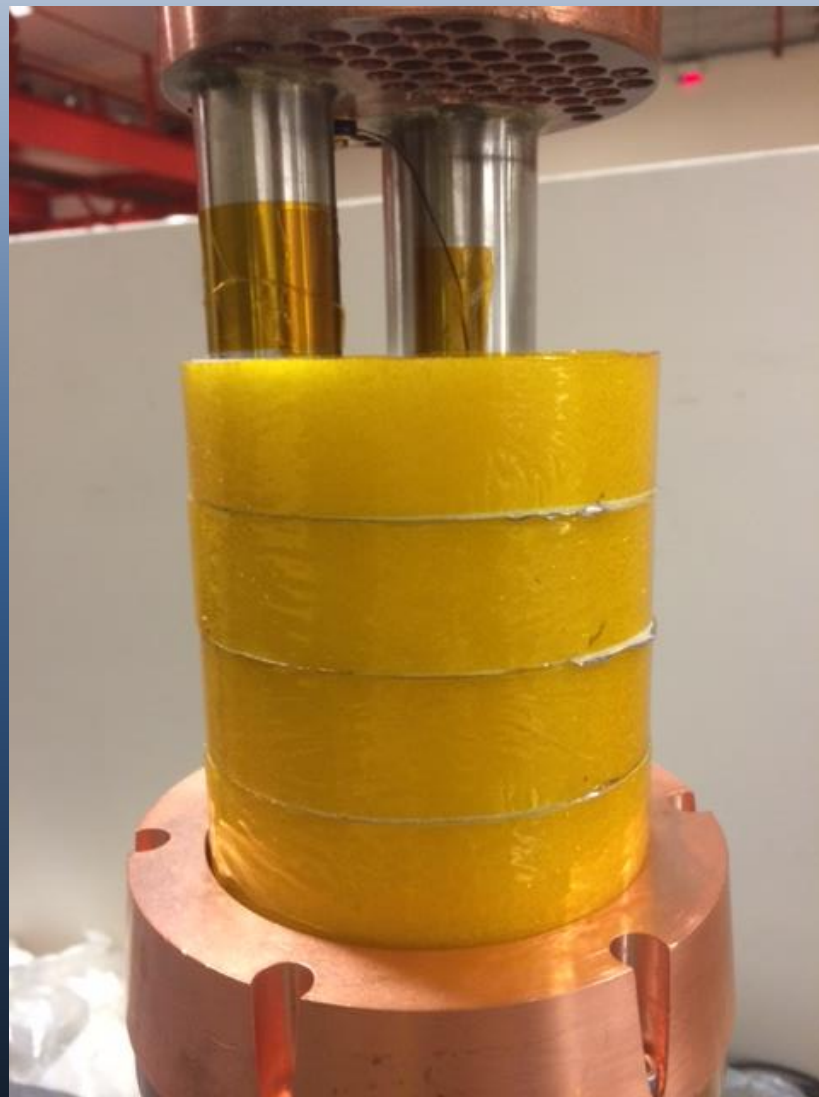
Vacuum Gauge Tree



Helium Circuit

- Change cold head O-rings and clean cold head surfaces
- Install foam insulators on all cold heads
- Install all cold heads
- Extend SS2 Exhaust Line
- Install SS2 pressure transducers
- Leak check helium circuit after all helium circuit work is done

Cryocooler Insulation

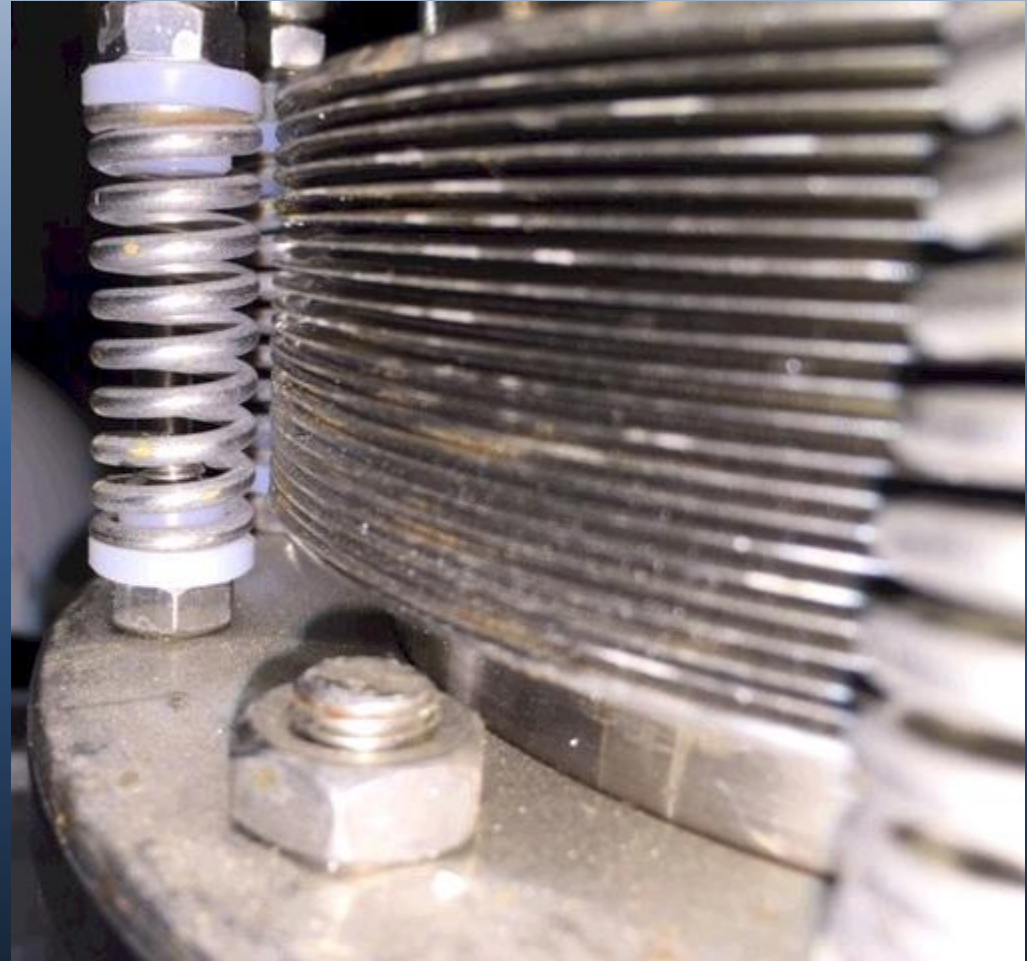


Compressors

- Establish power to compressors
- Set up compressor water cooling
- Lay out compressor hoses
- Route compressor motor cables

Bellows Leak

- A small leak was found on the SS1 single stage cooler bellows
- Replacement is very difficult, and part is not readily available
- LBNL techs carried out a repair in place using vacuum epoxy



Cryocooler Update

- Recent cooler tests completed at LBNL
- 2 of 3 heads were underperforming
- Poorly performing heads are on the way to Cryomech for refurb
- 3rd head found to provide 70 mW additional cooling at 4K w/insulation
- Insulation added to all heads at RAL



Cryocooler Update

- To date, LBNL has sent the following to RAL:
- 10 ea PT-415 compressors
- 9 ea PT-415 cooler heads
- 2 ea AL-330 single stage heads
- 1 ea AL-330 compressor
- Associated hoses
- FNAL purchased & sent a spare PT-415 head



Cryocooler Update

- LBNL will be sending the following to RAL in the coming months:
- 2 ea PT-415 cooler heads (after refurb & test)
- 1 ea PT-415 compressor (after head testing)
- 1 ea AL-330 compressor (DOE property issue)
- One pair of PT-415 hoses

