260-L LAr System Progress Report

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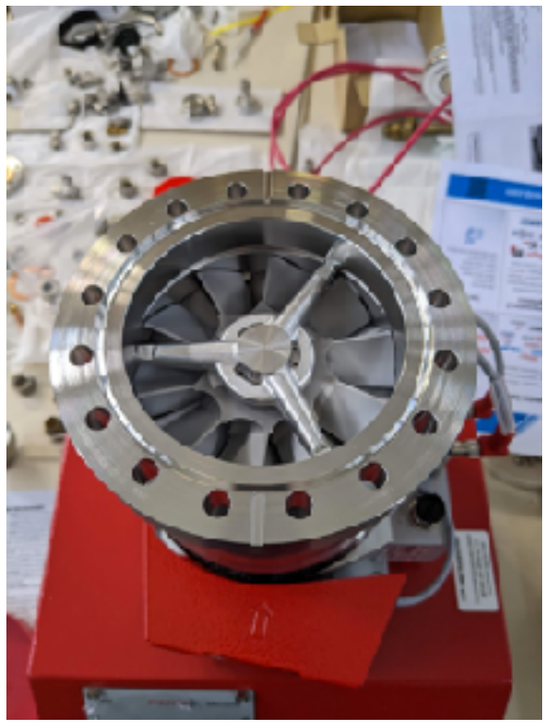
Lab Safety and Space Management

- COVID level in Suffolk County is in LOW
- Face masks are optional onsite at BNL
- Be careful onsite today due to slippery surfaces
- Not clear about the coldbox placement at this moment

Vacuum pump testing

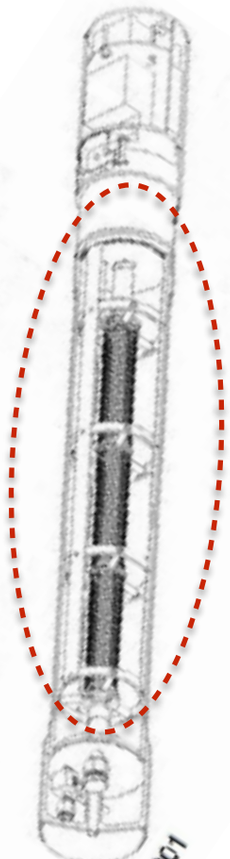
- The pump comes with 6-inch CF flange
- Working well pumping on itself
- Need a 6” to 4.5” reducer to fit in our vacuum system
- Just found treasure storage with the flanges we need in the basement



Xenon recycle for PIONEER prototype

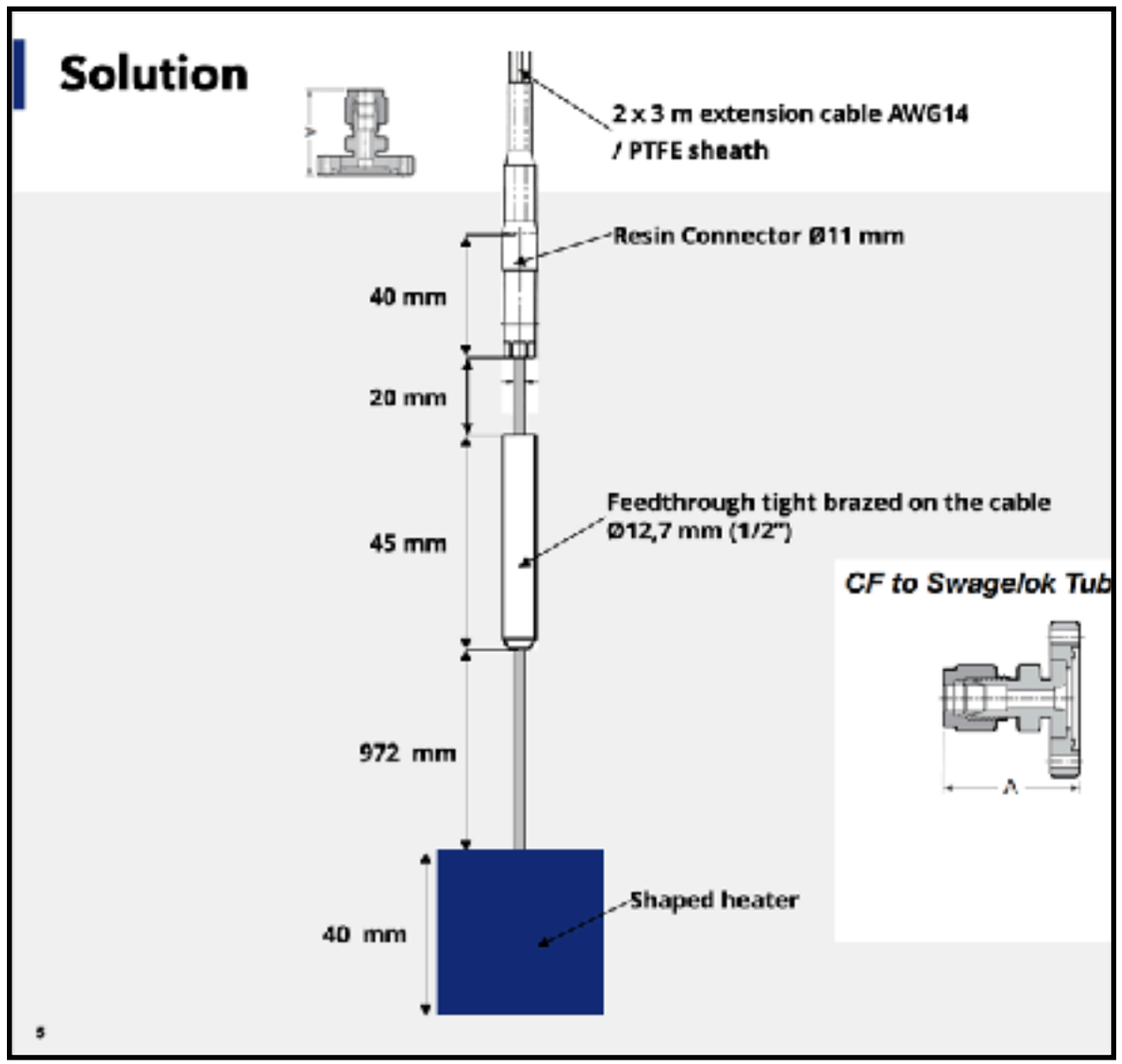
- We plan to loan the PIONEER prototype test at PSI with Xenon in stock
- Xenon is stored inside the 14x Xenon-1001 Gamma-Ray Detectors in storage since 2007, estimated ~50 kg
- Need to take a sample for chemical component analysis by an outside vendor to verify the purity
  - Got experience Carter for a similar test on the krypton we have in stock in 2015
  - Get a gas sample cylinder for sending the sample
  - A good application for our new pump
- Once the purity being verified, we could move on to transfer and shipping, estimated in ~8 gas cylinder assuming with 1000 psig storage pressure

Xenon volume

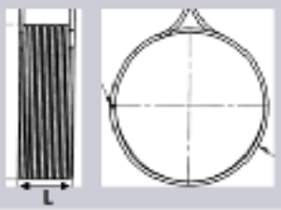


LAr Heater production

- **Thermocoax Proposed a solution for our heater**
  - Two shapes proposed with low unit area heating power
  - To be conservative, I prefer the solution with the lowest unit area heating power
  - I will require the heating plate to be parallel to the top flange
  - Modeling the heating in the setup to confirm the dimenions



Solutions (1500 W under 110 V)

Shaping	Heater 1	Heater 2	Heater 3
	Ø = 3 mm	Ø = 3 mm	Ø = 3,5 mm
	Hot length = 2,5 m	Hot length = 3,3 m	Hot length = 3,8 m
	P / S = 6,53 W / cm²	P / S = 4,90 W / cm²	P / S = 3,62 W / cm²
	ID = 18 mm OD = 104 mm	ID = 18 mm OD = 120 mm	ID = 21 mm OD = 126 mm
	L ≈ 120 mm if Ø 20 mm L ≈ 60 mm if Ø 40 mm L ≈ 40 mm if Ø 60 mm	L ≈ 160 mm if Ø 20 mm L ≈ 80 mm if Ø 40 mm L ≈ 54 mm if Ø 60 mm	L ≈ 214 mm if Ø 20 mm L ≈ 109 mm if Ø 40 mm L ≈ 74 mm if Ø 60 mm

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