The DEAP-3600 Dark Matter Detector

Detector construction

Detector overview.

The **neck** will allow access to the inner vessel for cleaning and liquid argon circulation.

Liquid argon at a total mass of 3600 kg (1000 kg after fiducial volume cut) serves as the WIMP target material. WIMPs interacting here create scintillation light.

The spherical inner **acrylic vessel** has a diameter of 170 cm. It holds the liquid argon.

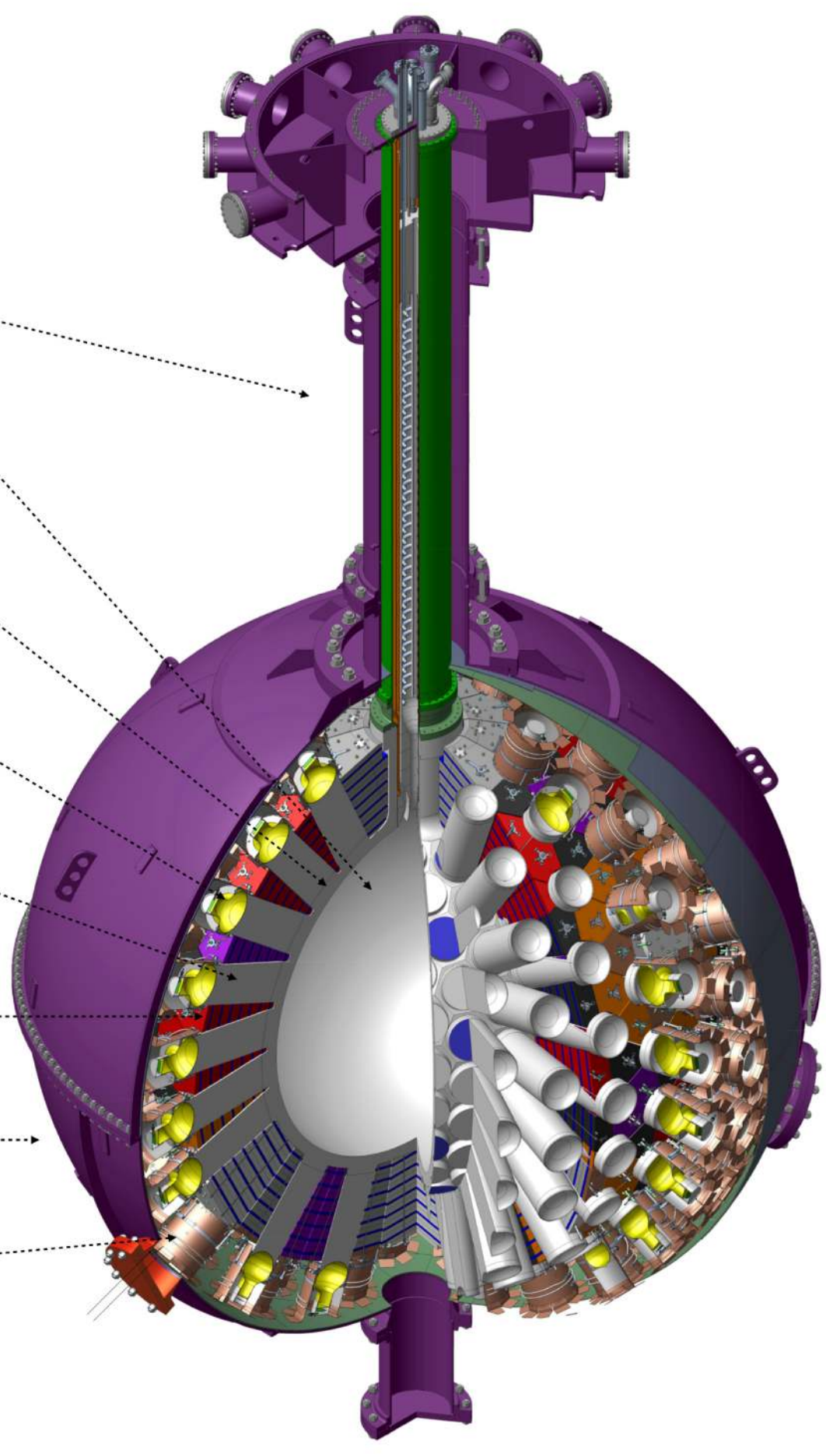
255 8" **photo-multiplier tubes (PMTs)** are optically coupled to the liquid argon volume by acrylic light guides. They detect the scintillation light.

The acrylic **light-guides** are long enough to absorb the neutrons emitted from the PMT glass and serve as thermal insulation, allowing the PMTs to be operated at near-room temperature.

Filler-blocks, made from HDPE sandwiched with foam, serve as additional neutron and thermal shielding.

The **stainless steel shell** isolates the detector from the water bath it is submerged in.

Copper **thermal shorts** keep the PMTs at their ideal operating temperature.

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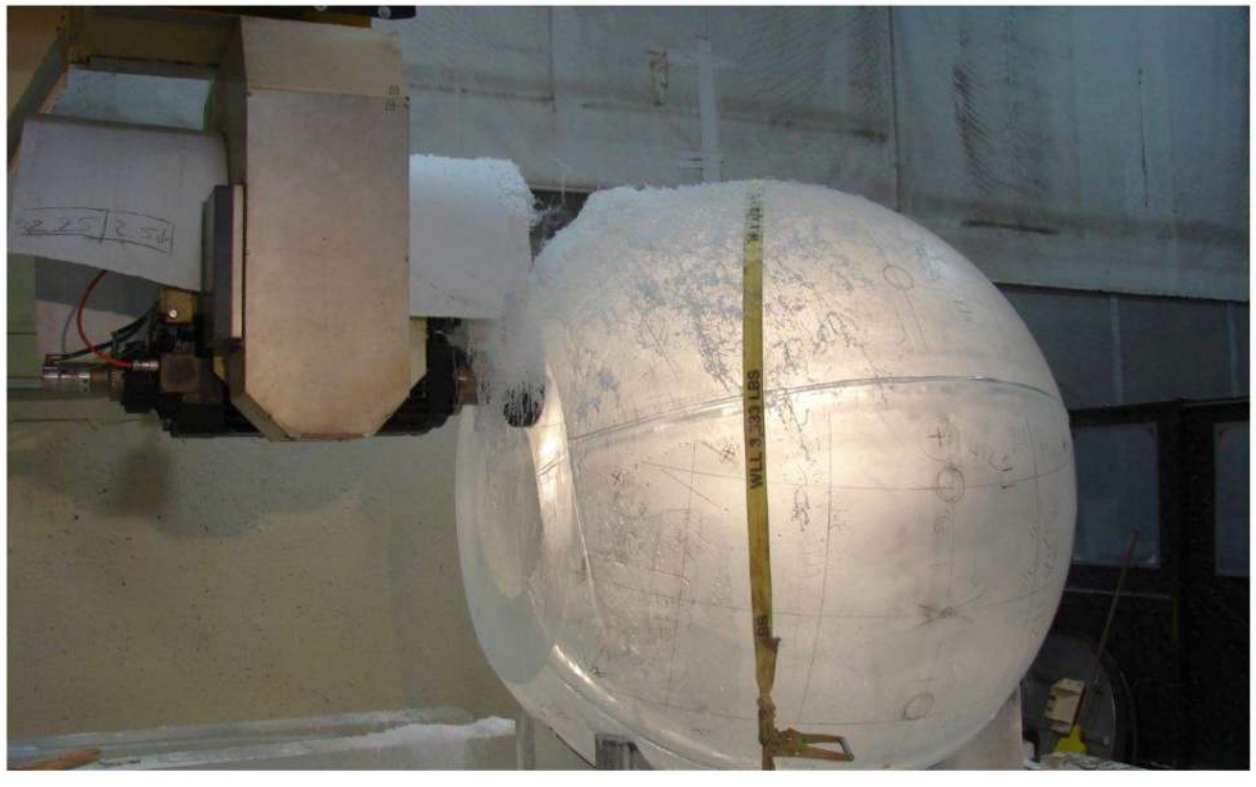

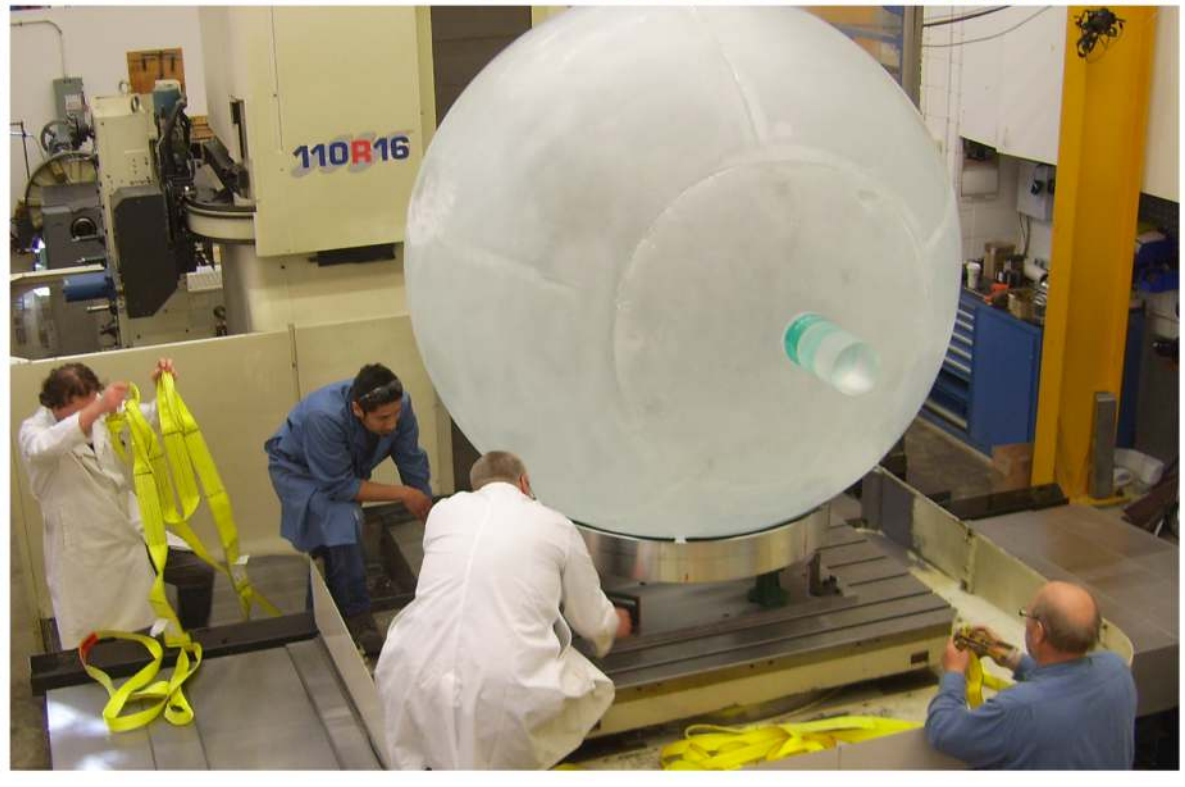
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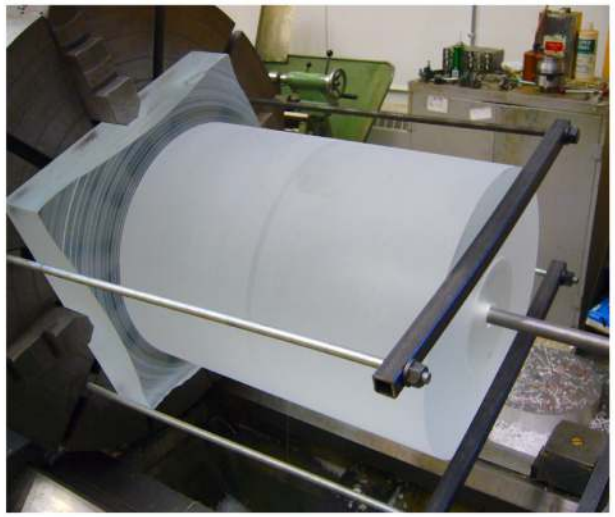

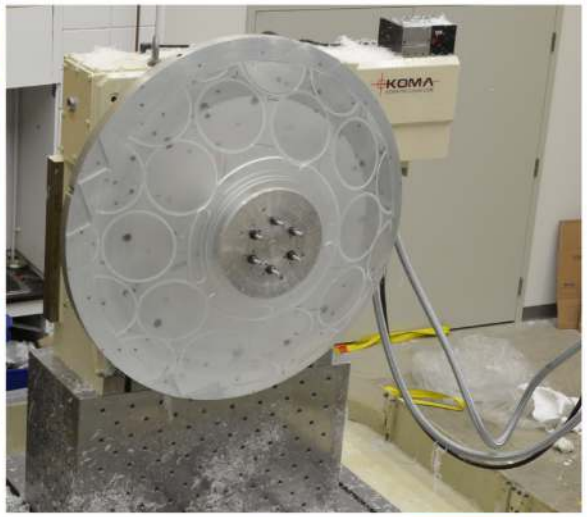
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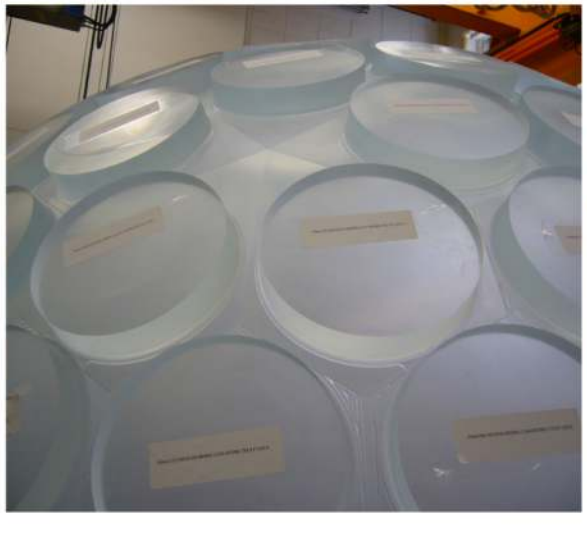

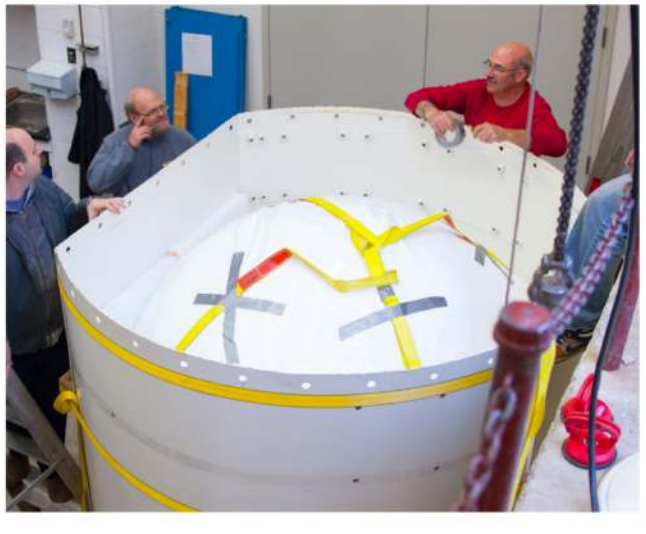

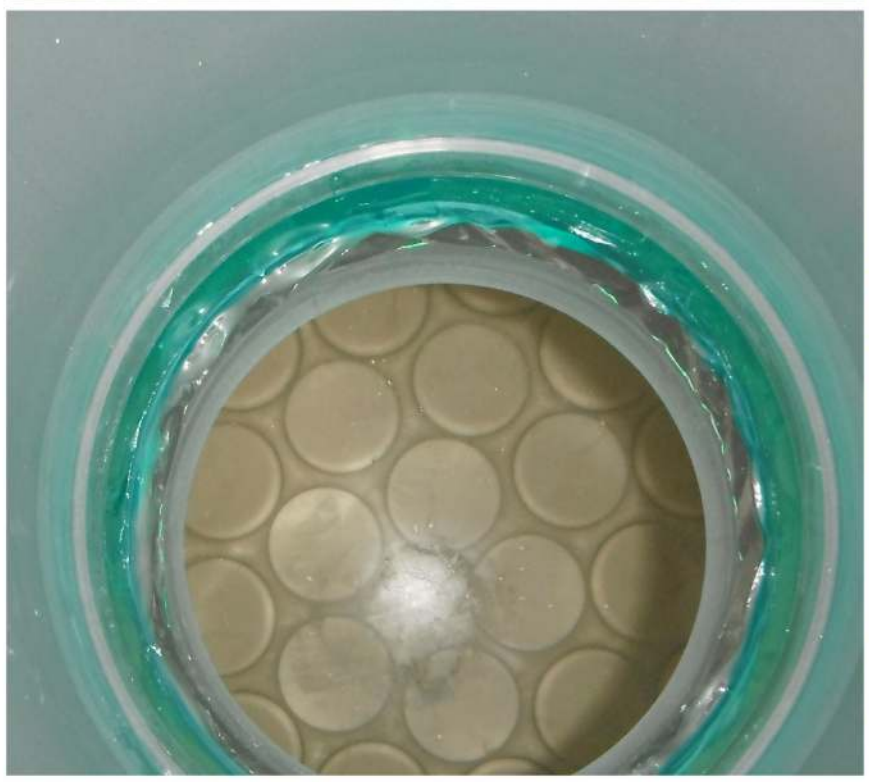

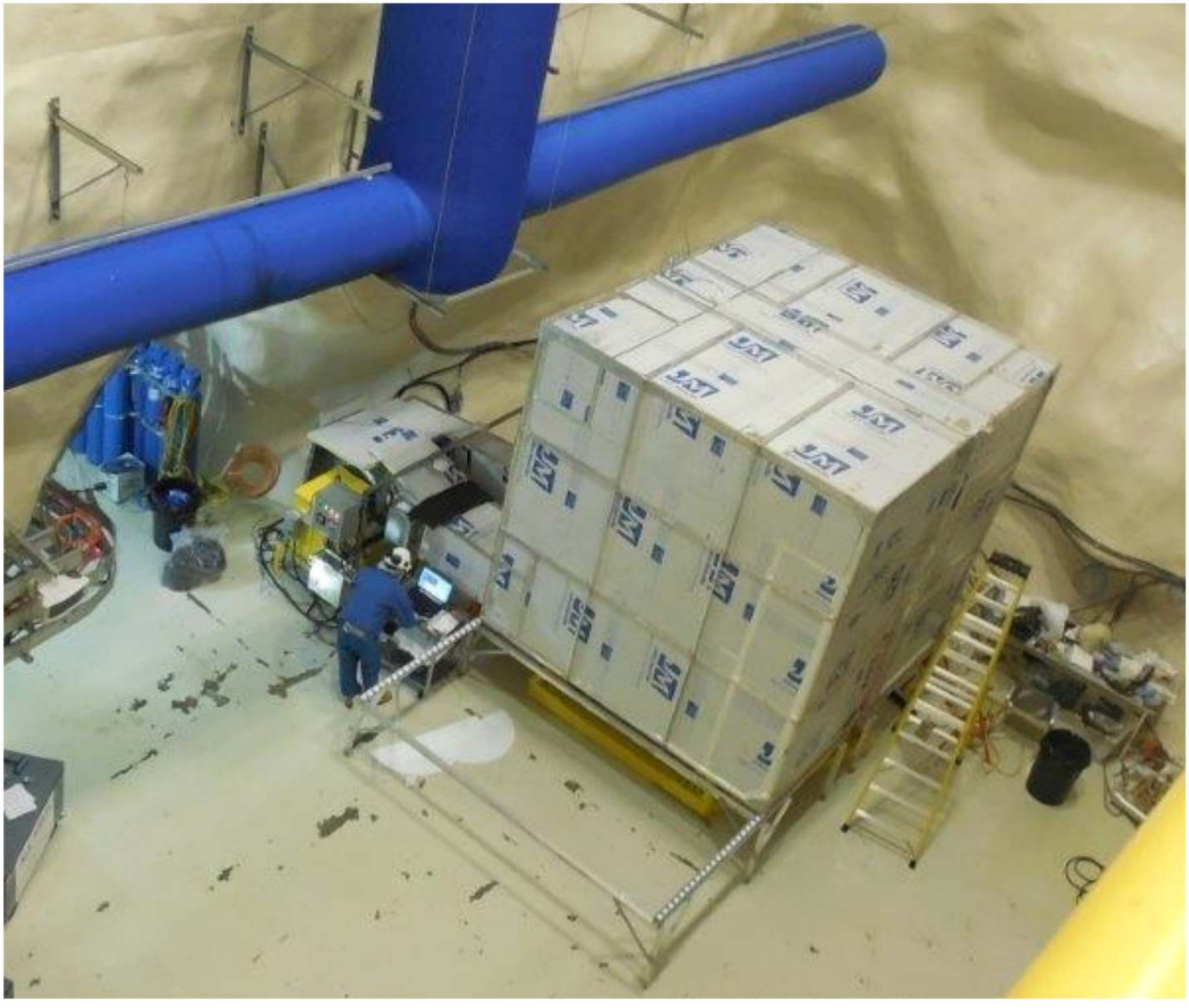

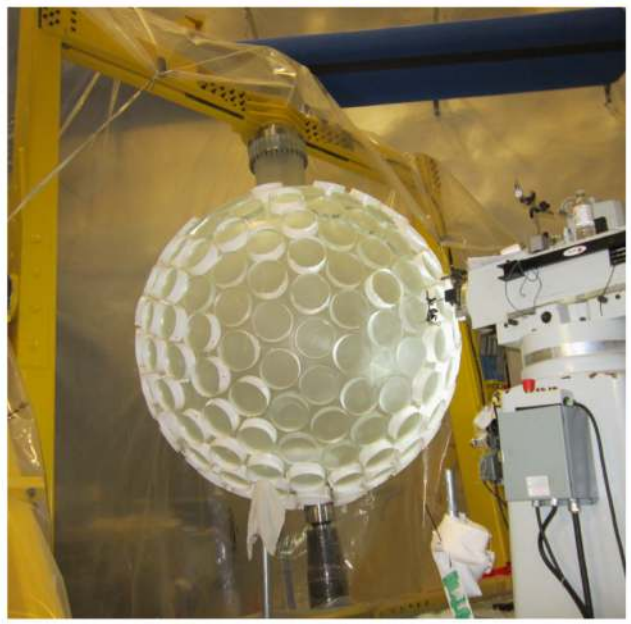

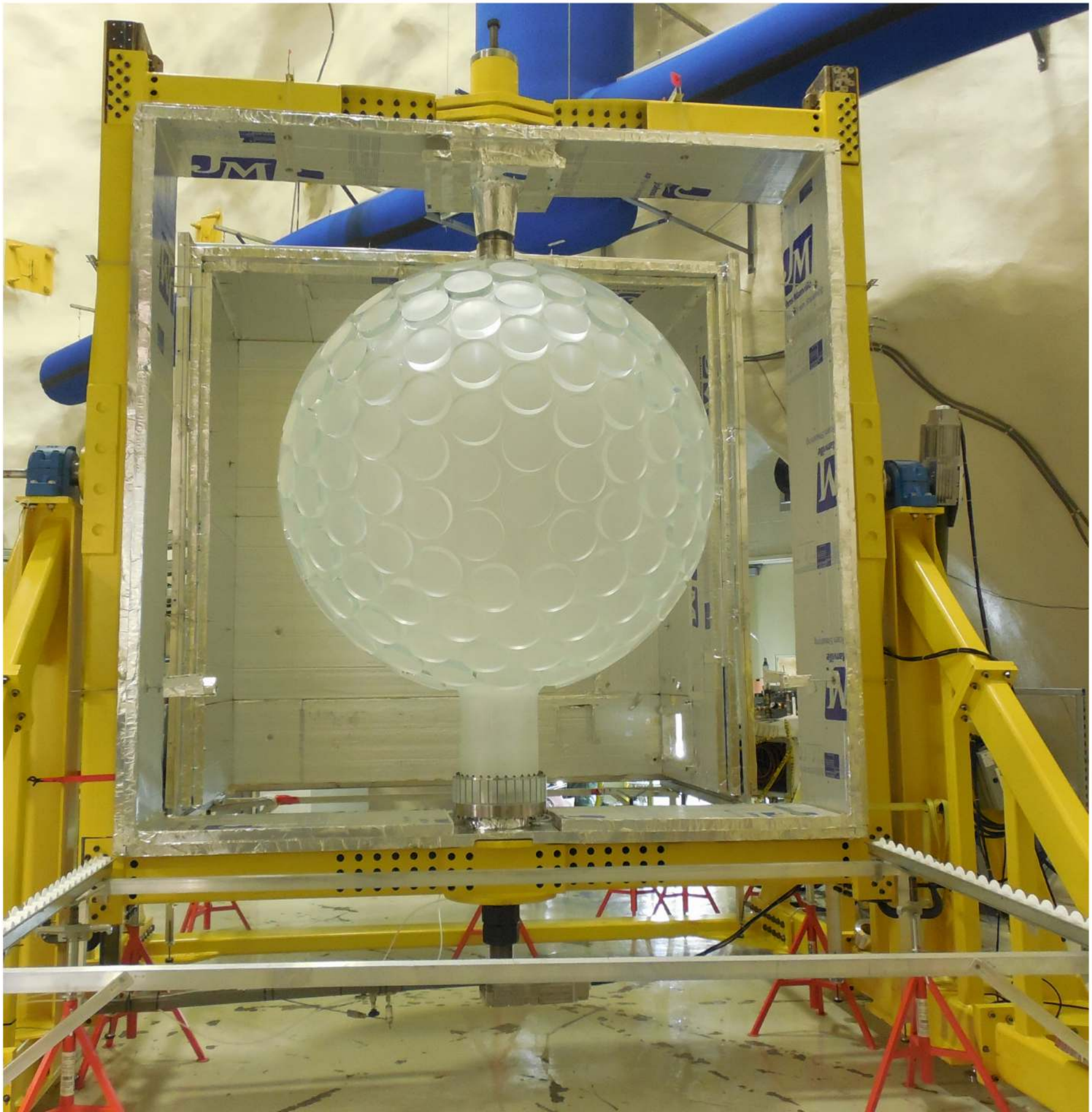

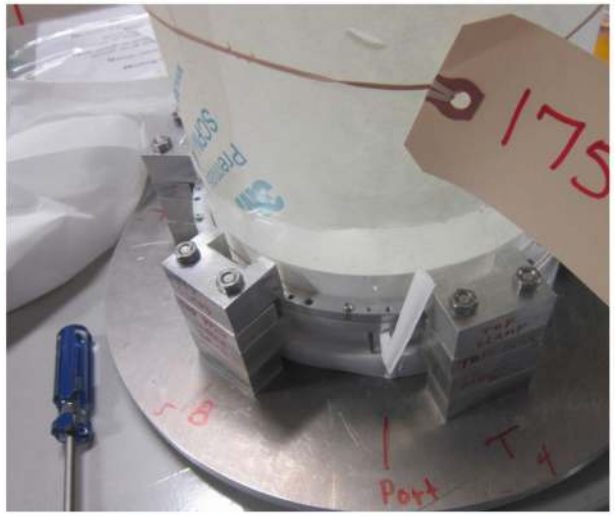
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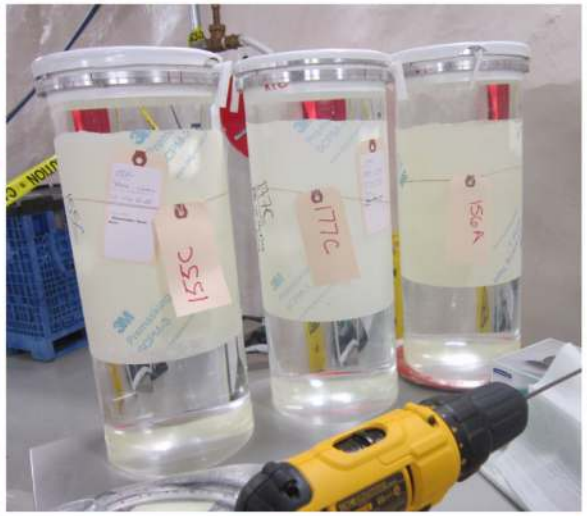
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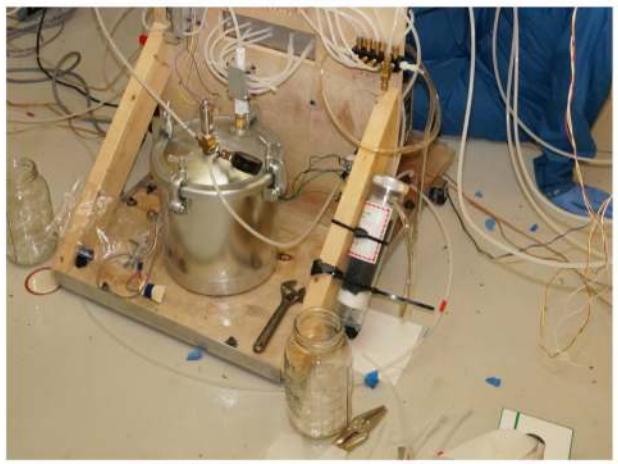
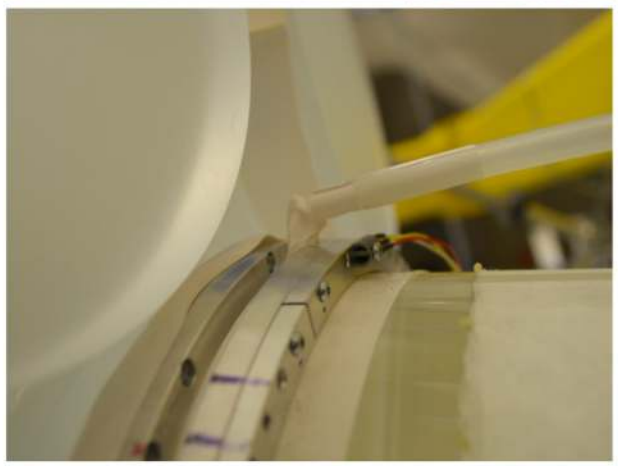
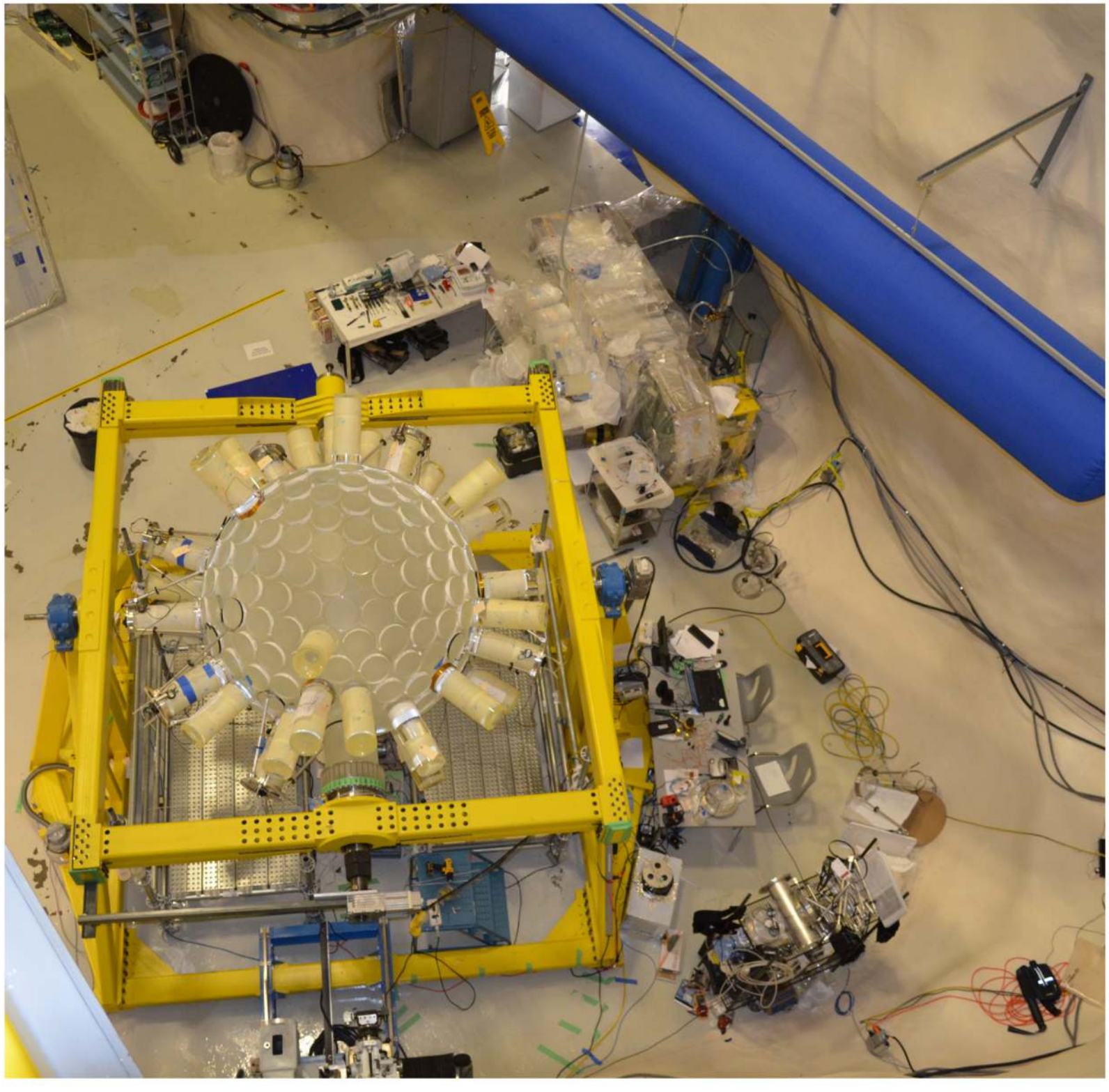
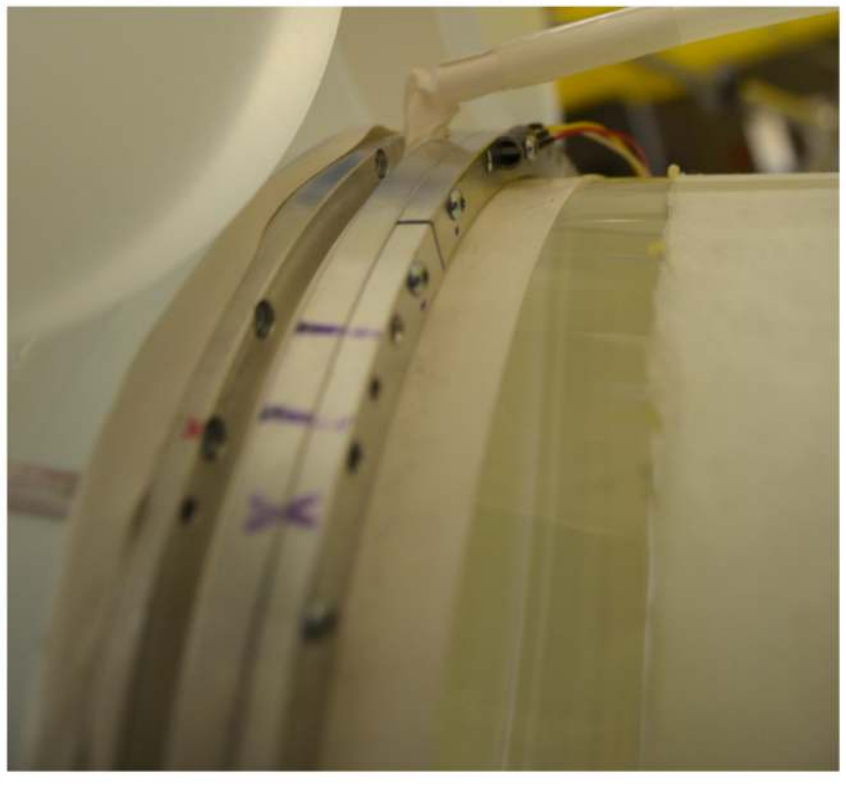
INSTALLATION DEPT.







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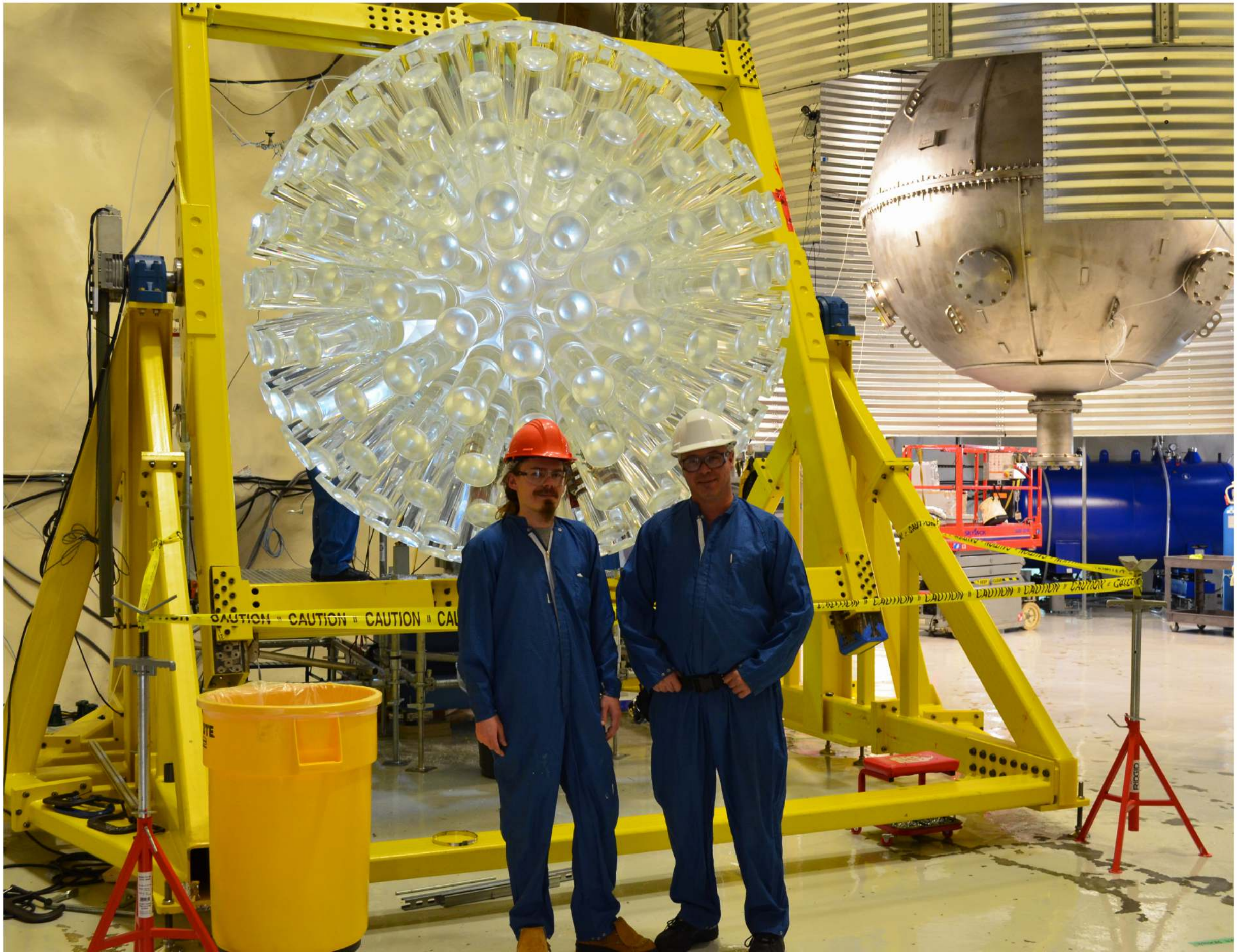
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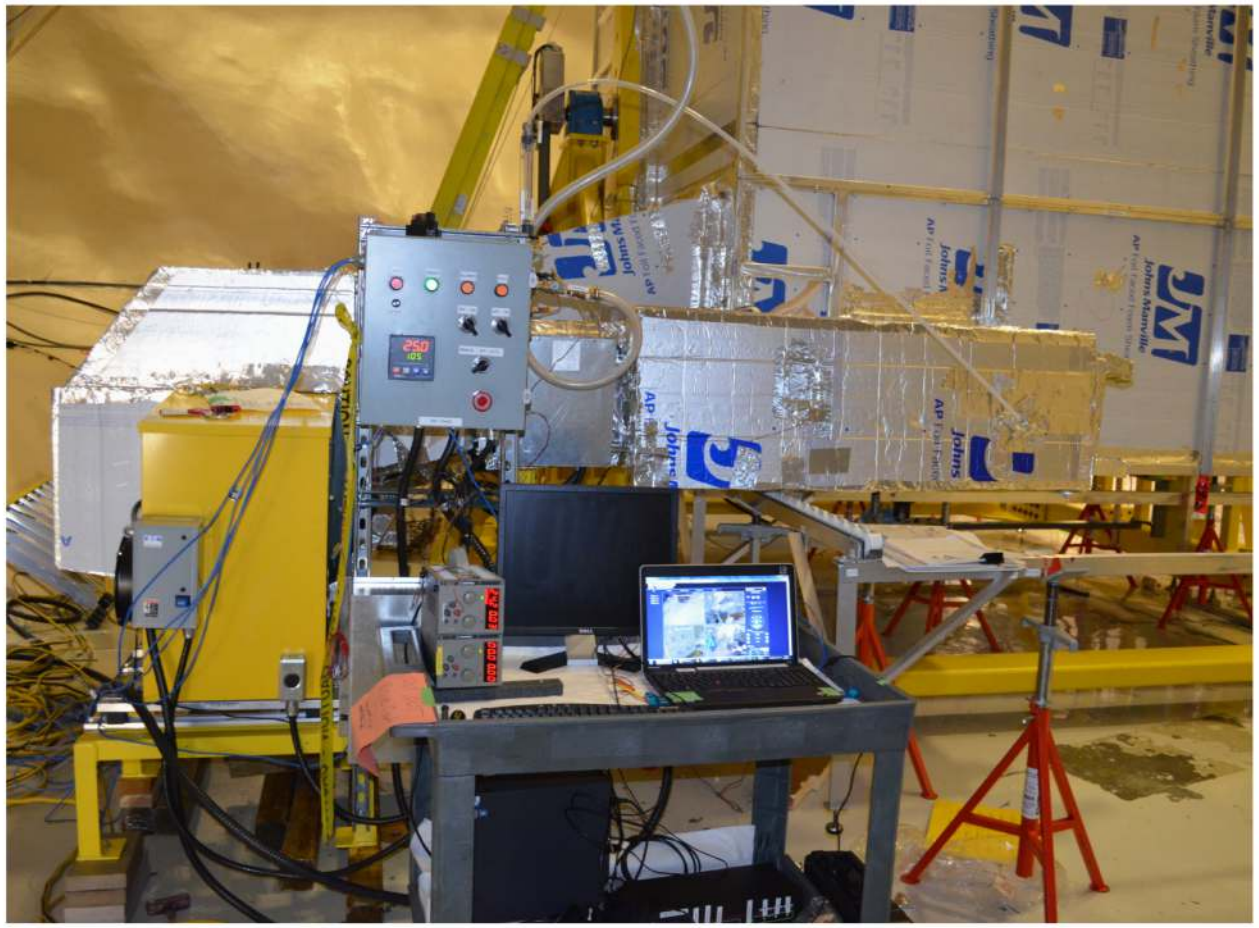
Johns Manville
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Johns Manville
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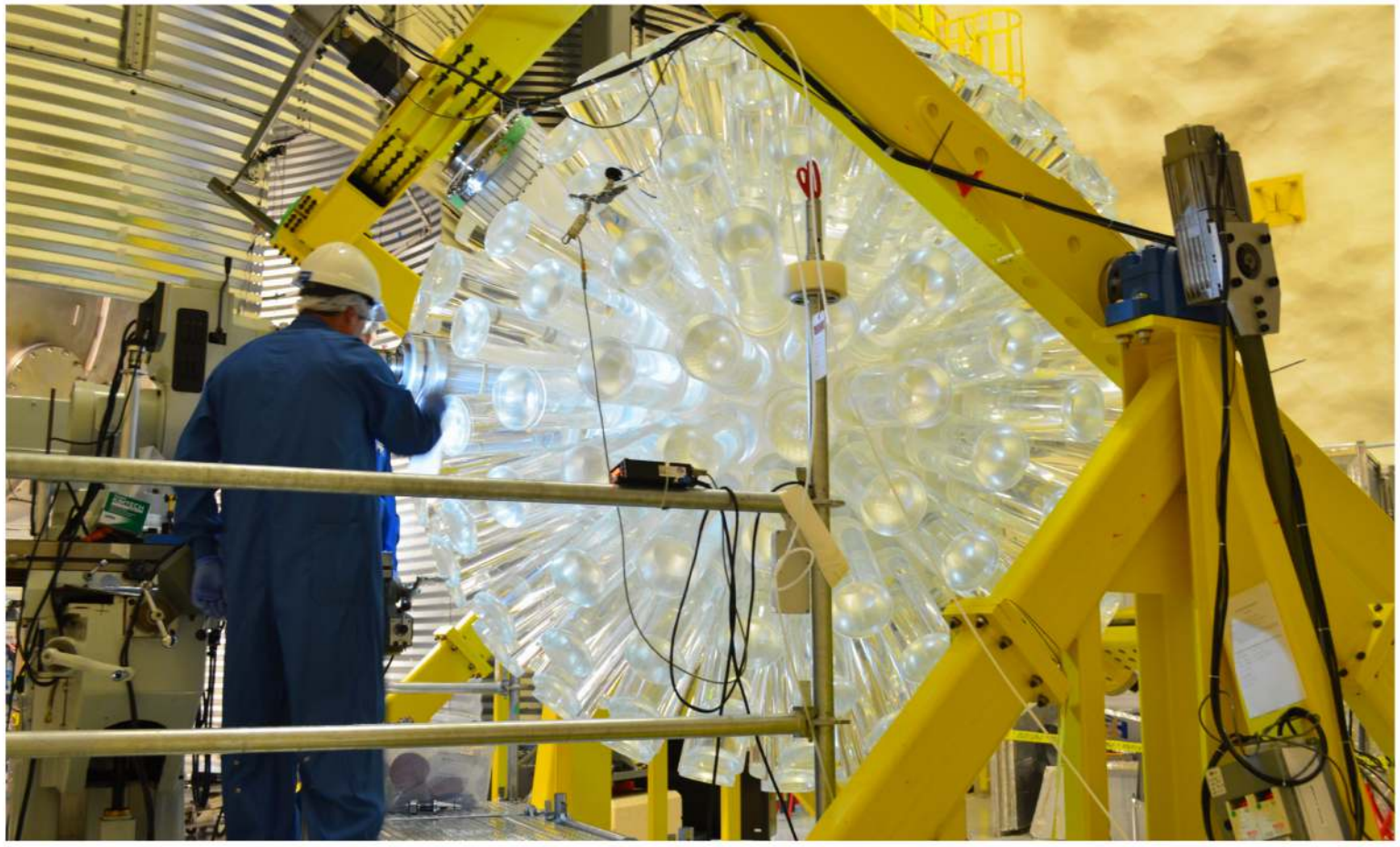

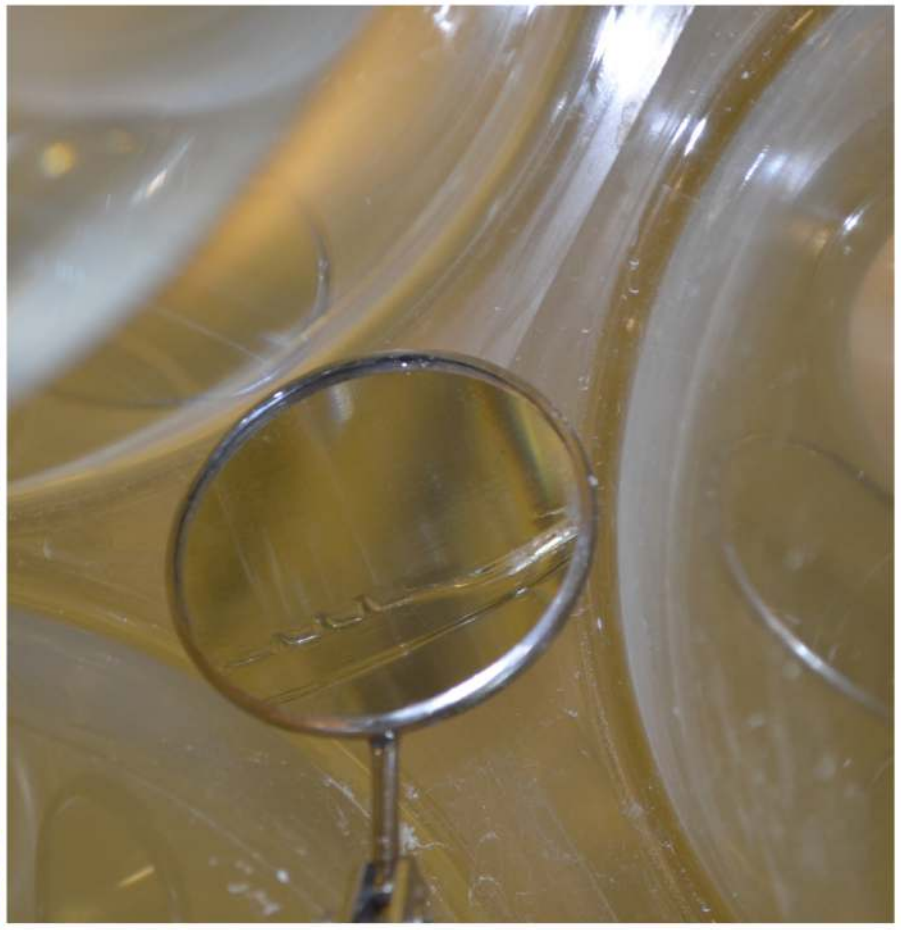

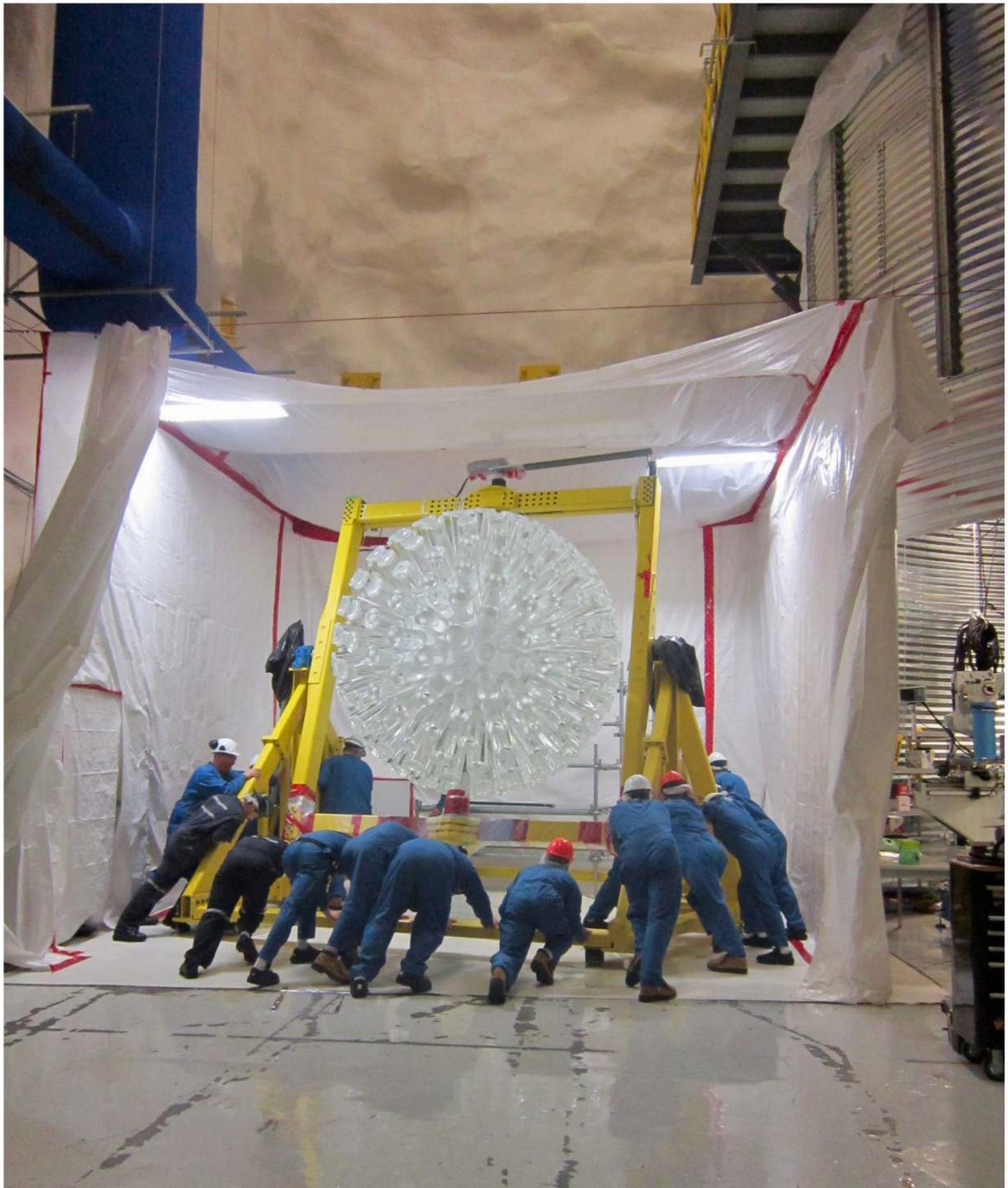

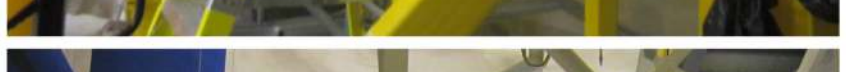

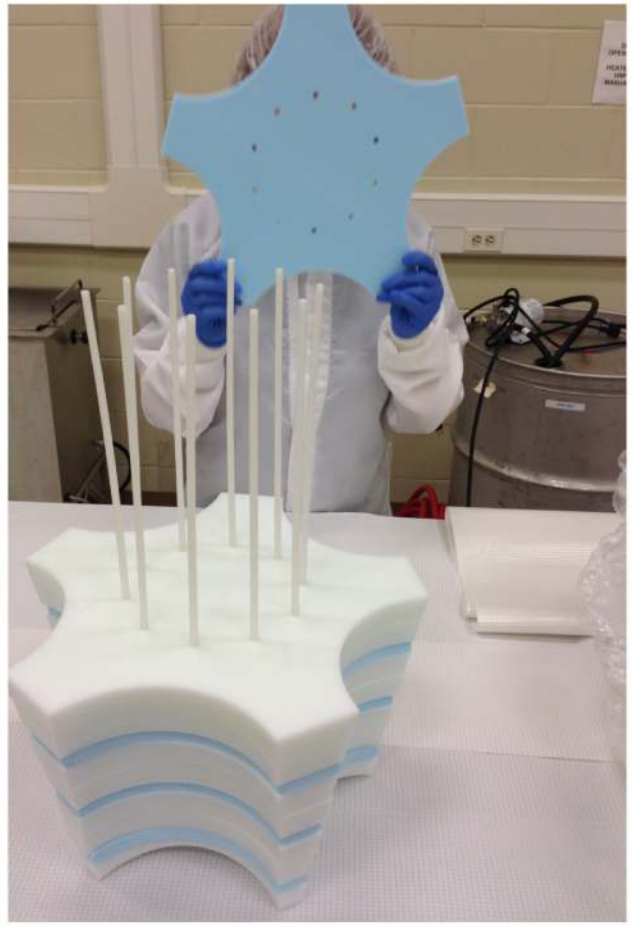

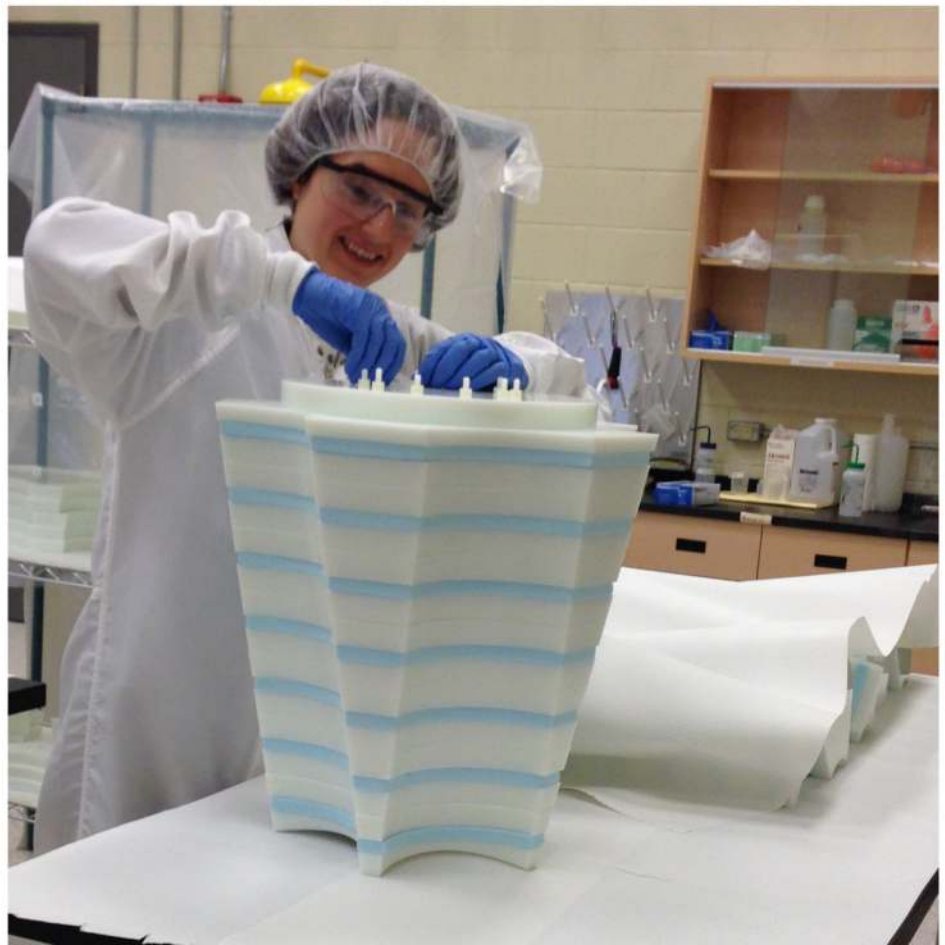


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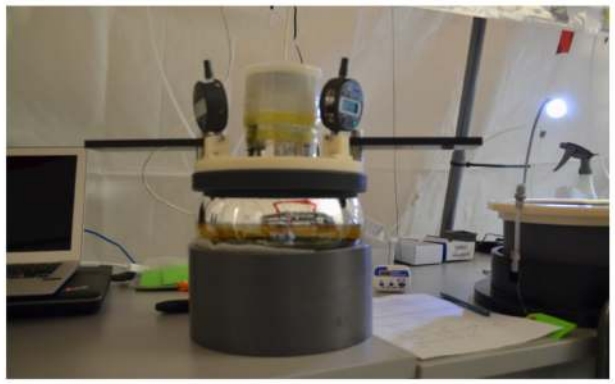

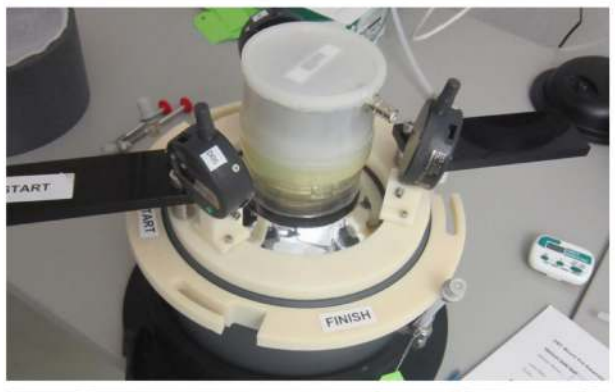
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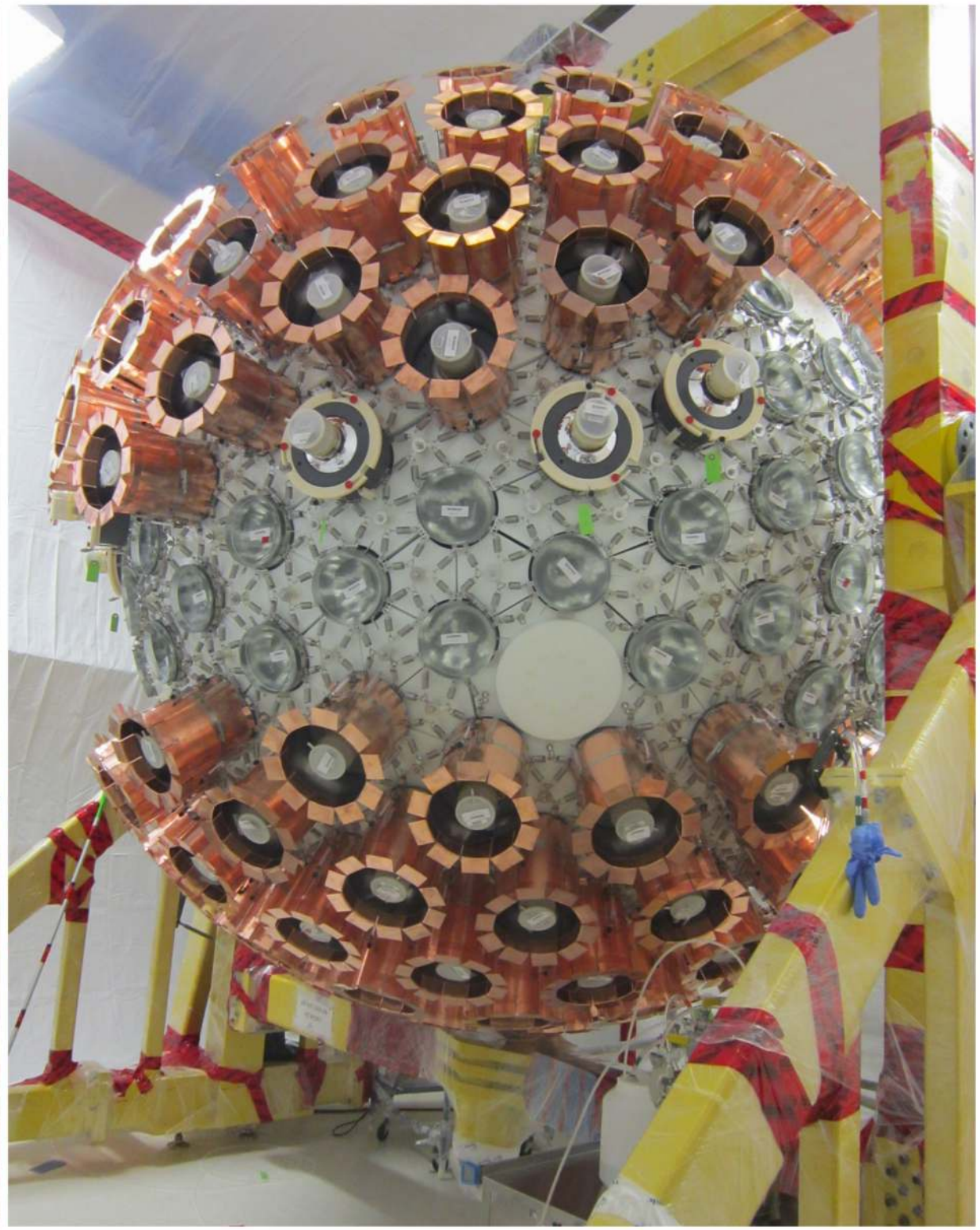
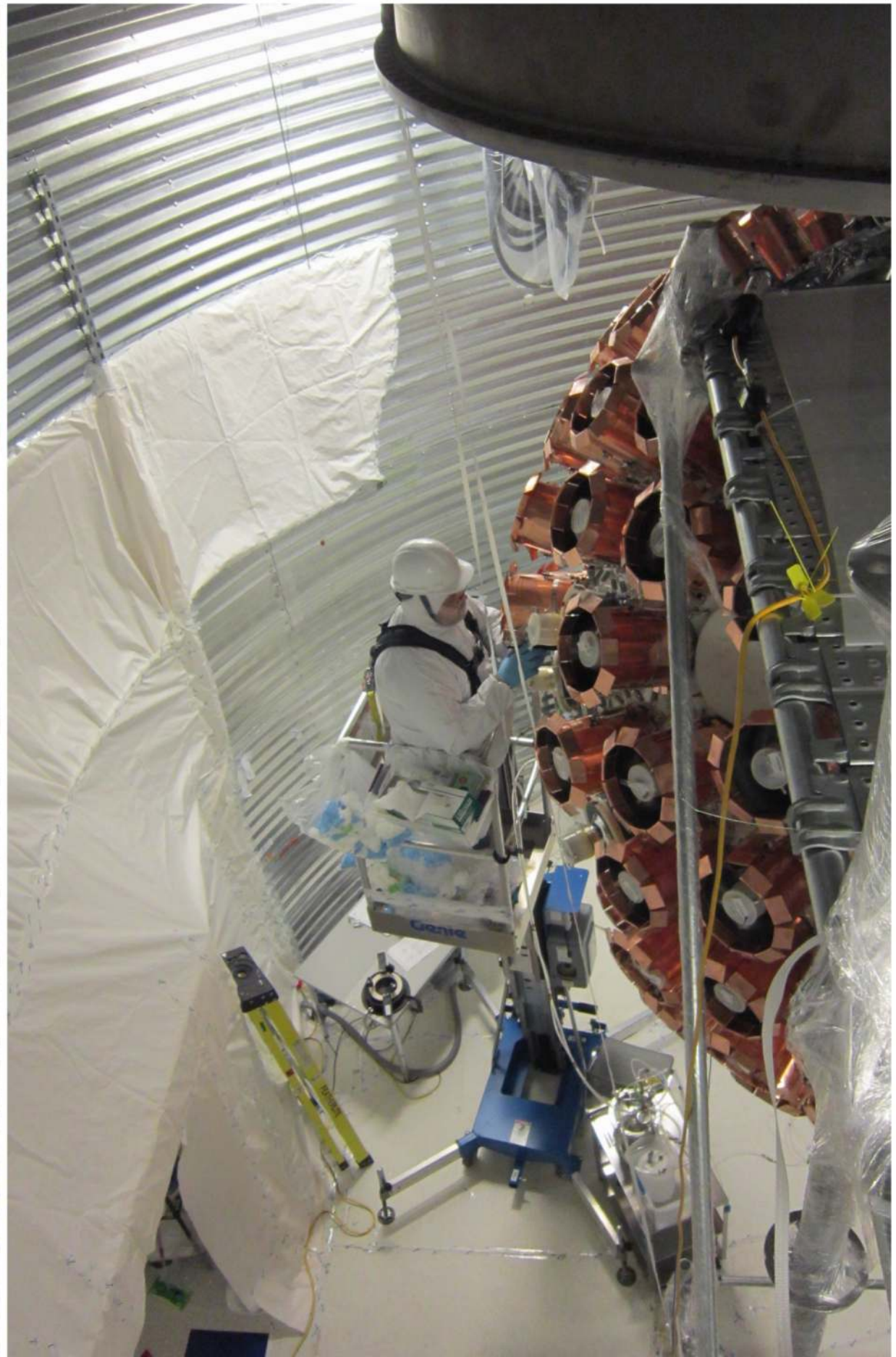
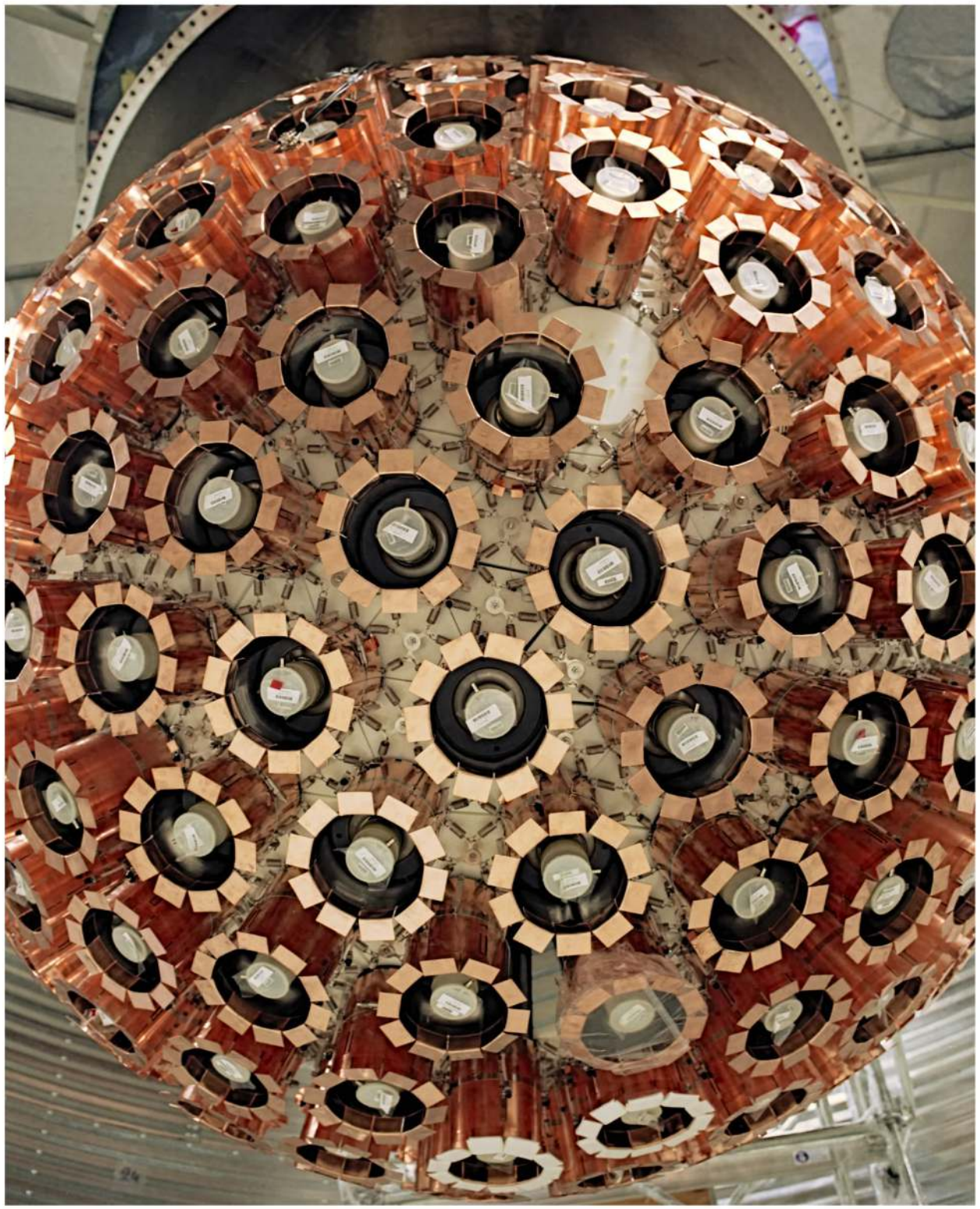
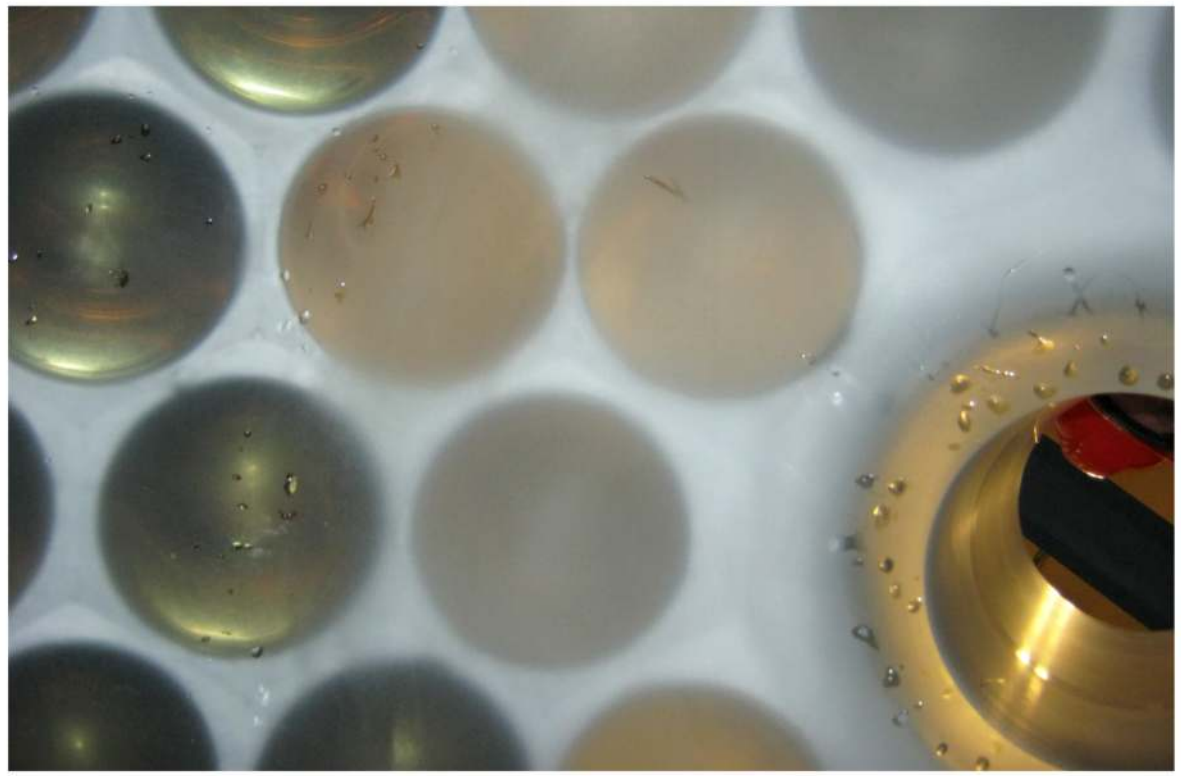


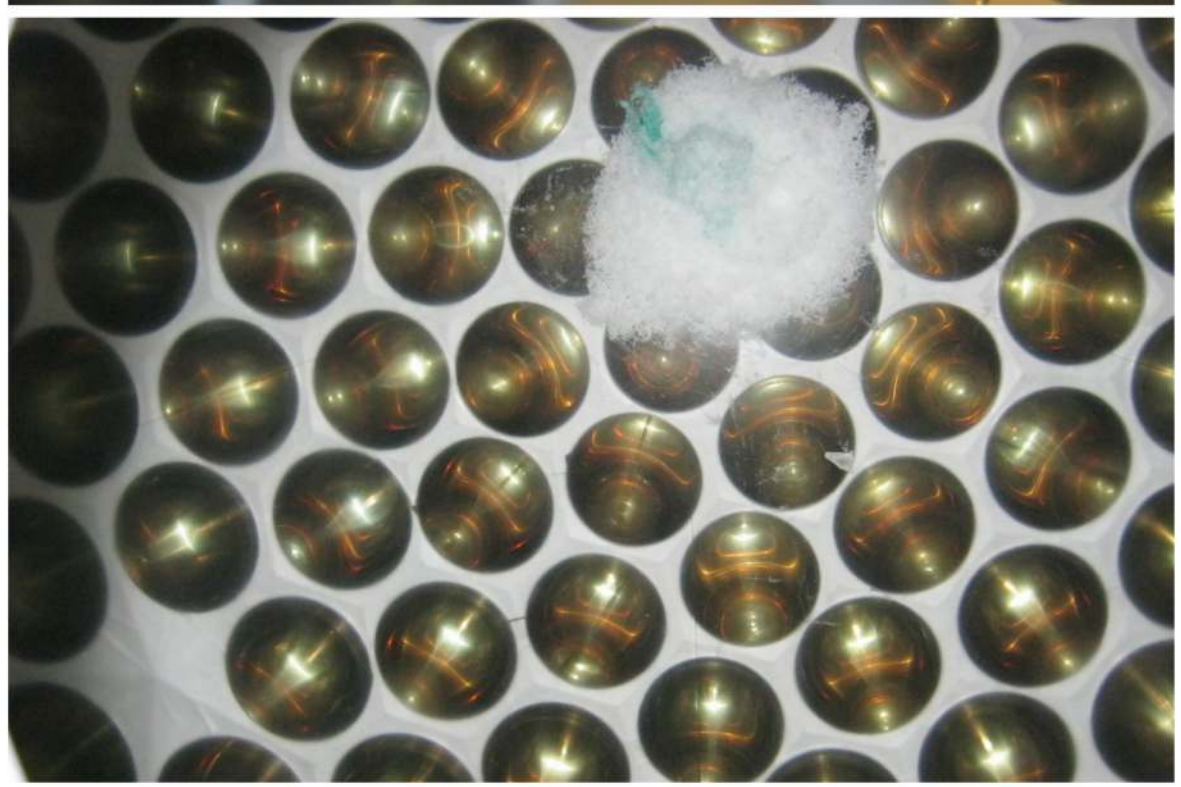

KEEP
CLEAR
SKYJACK


SKYJACK







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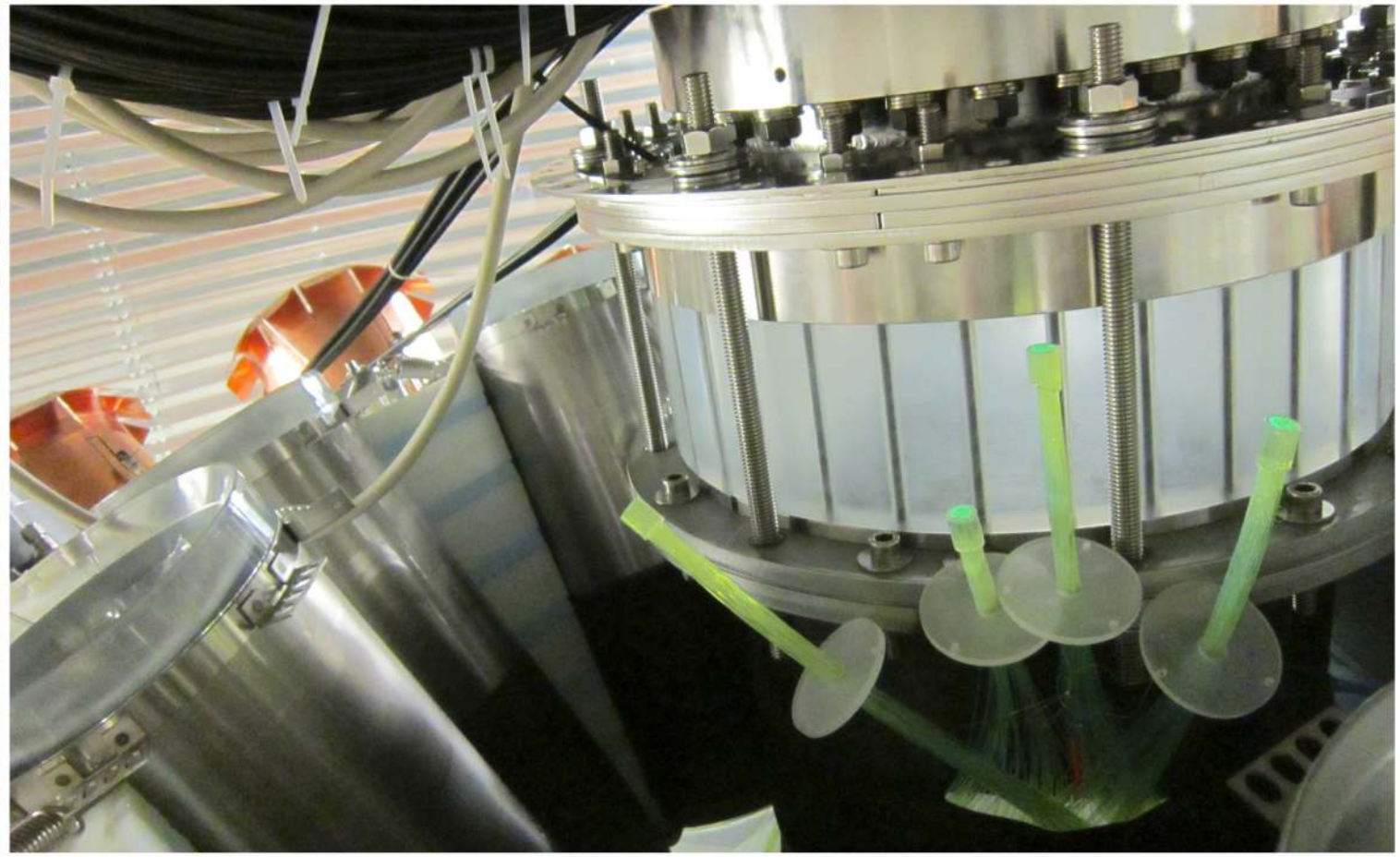

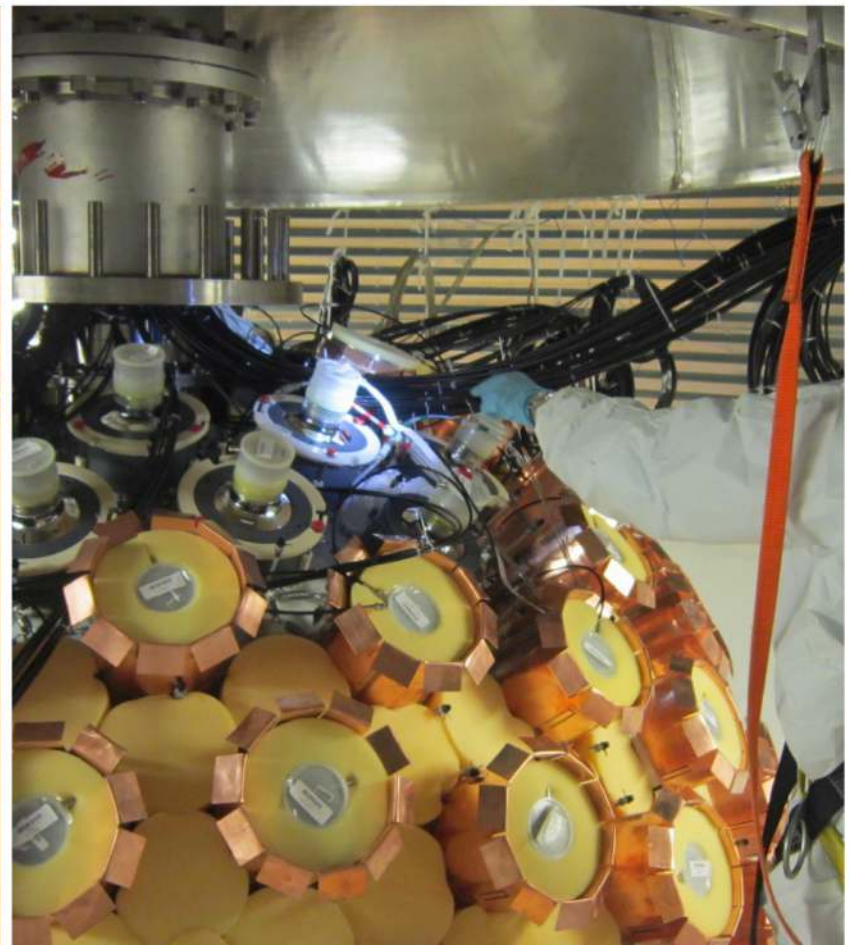


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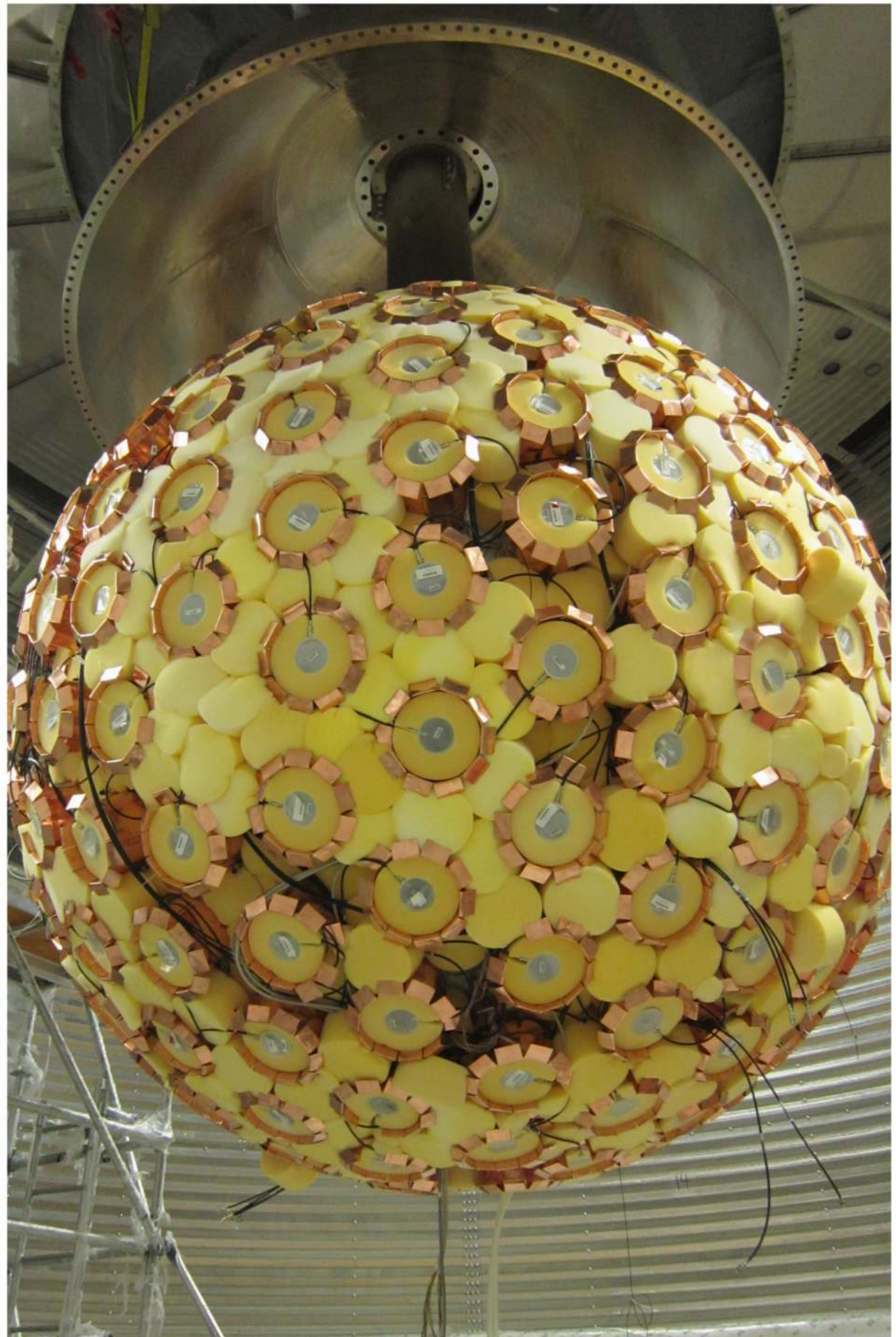

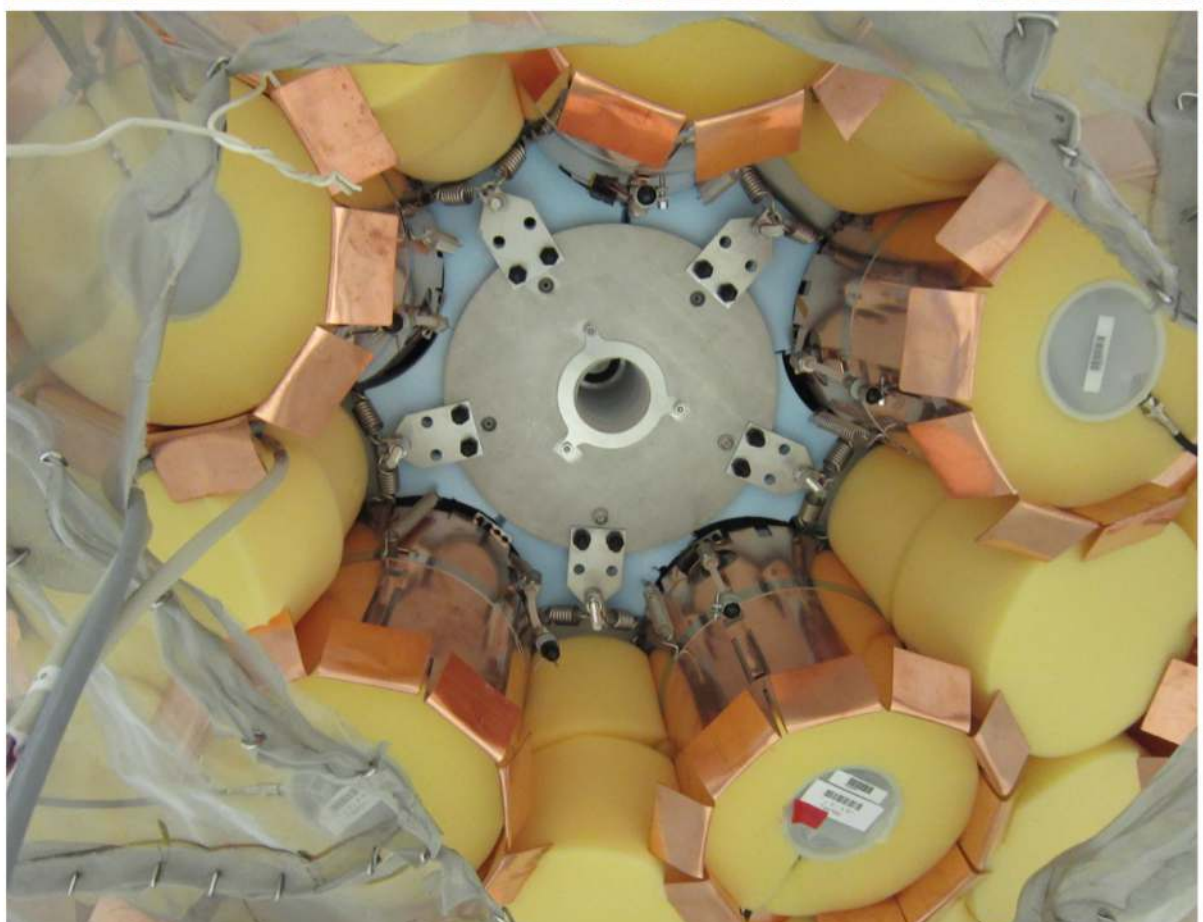

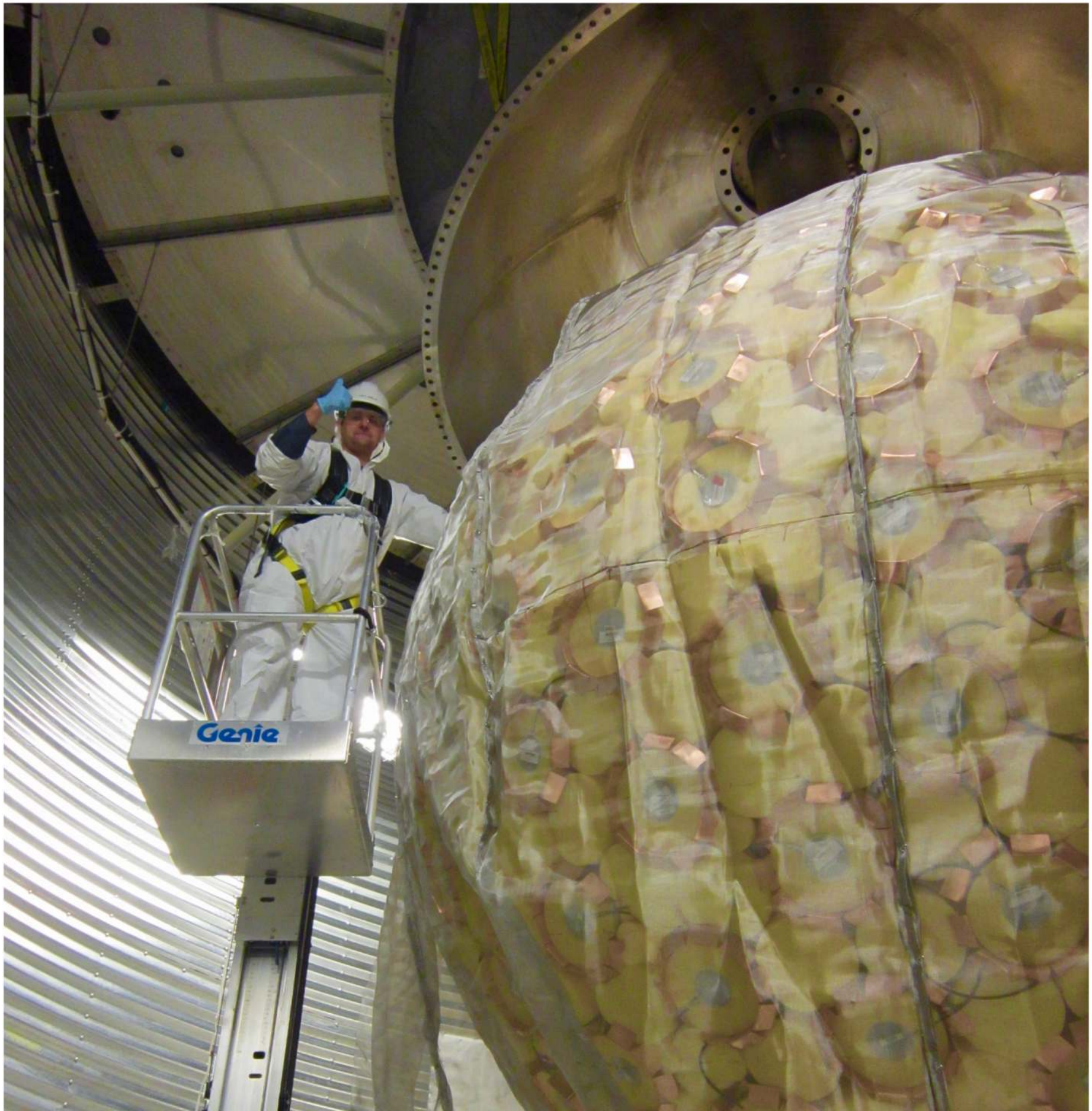
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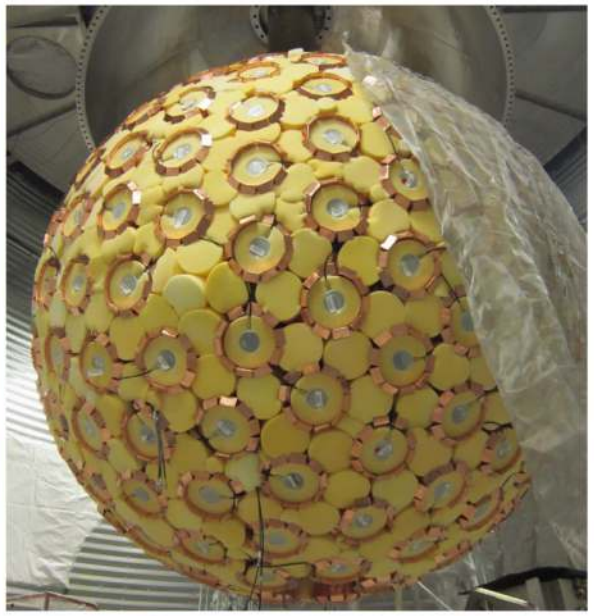

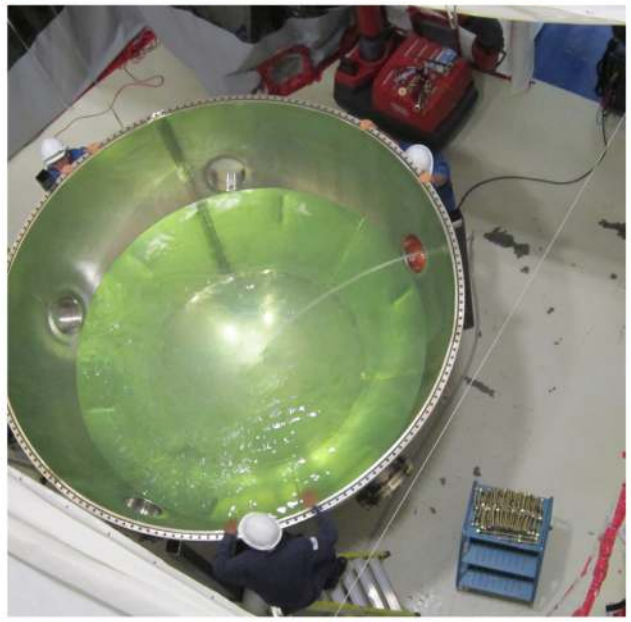


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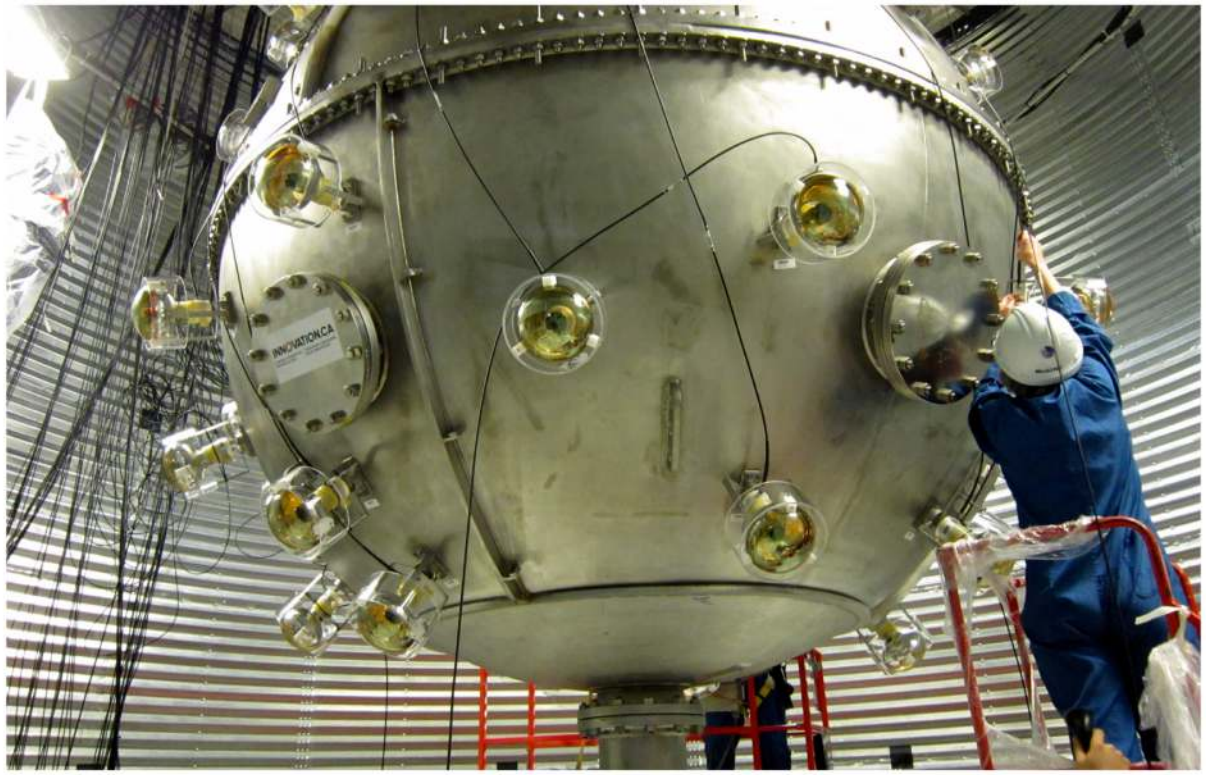
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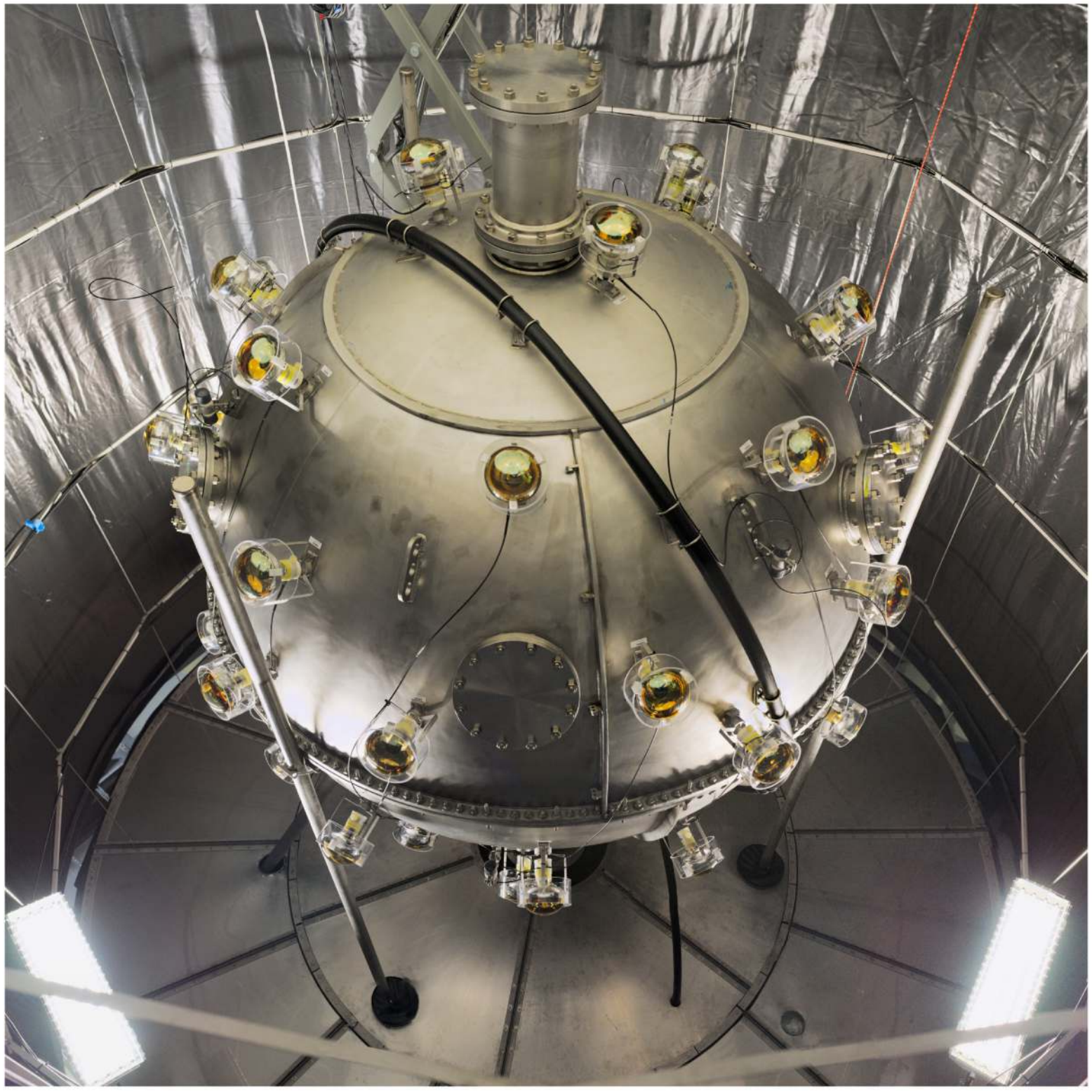
CAUTION
MEN
WORKING
ABOVE


SKYJACK

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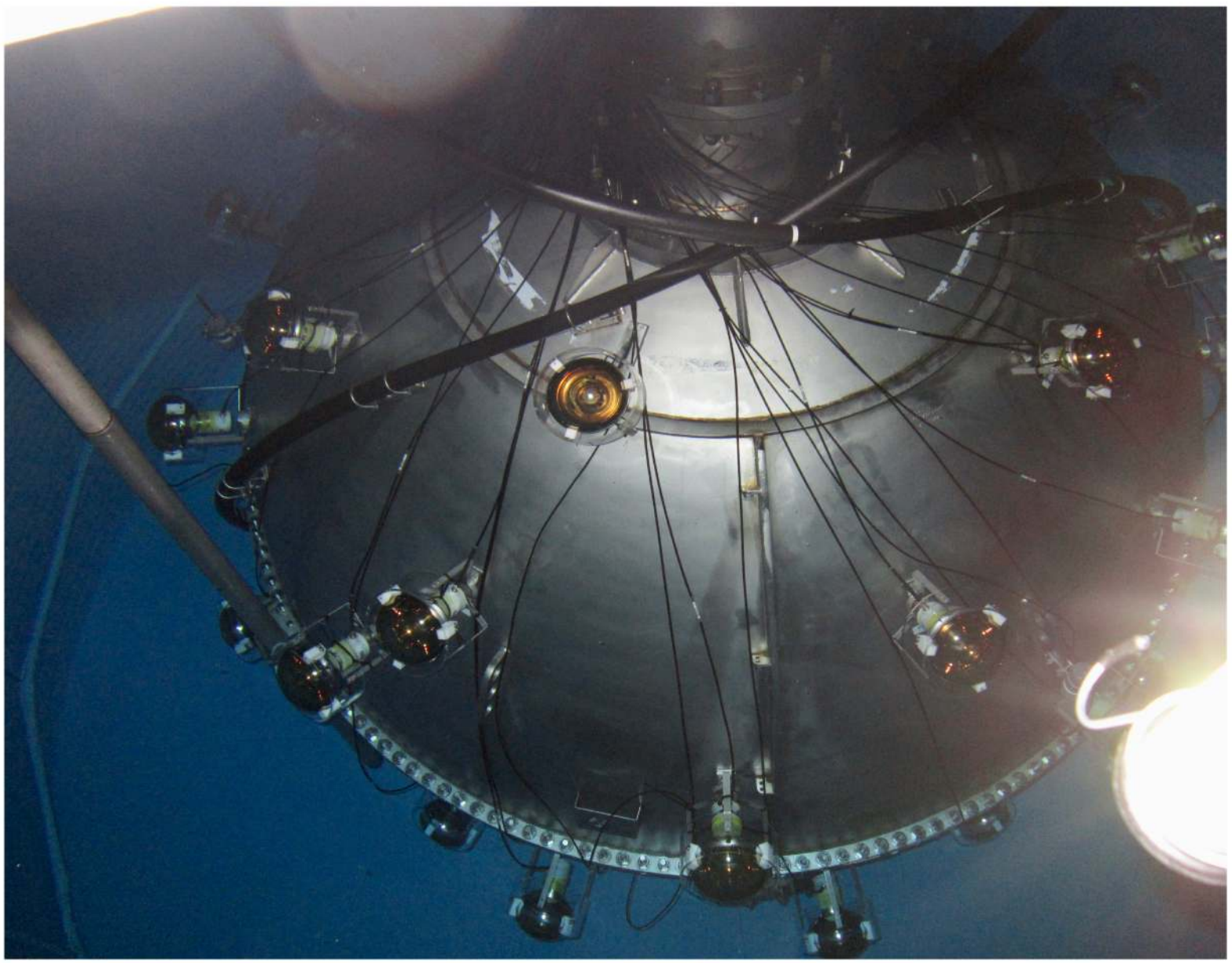

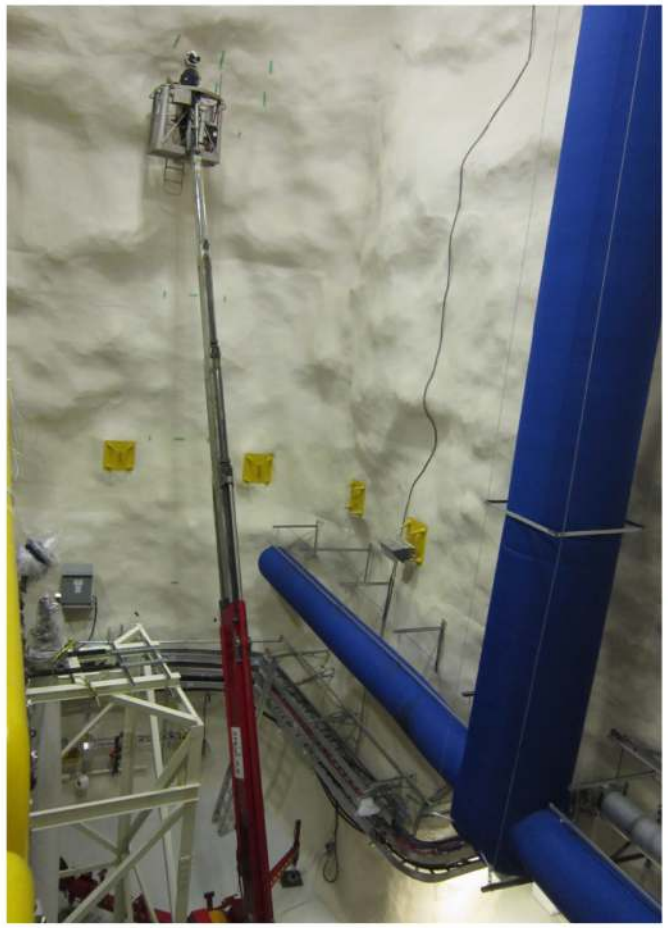


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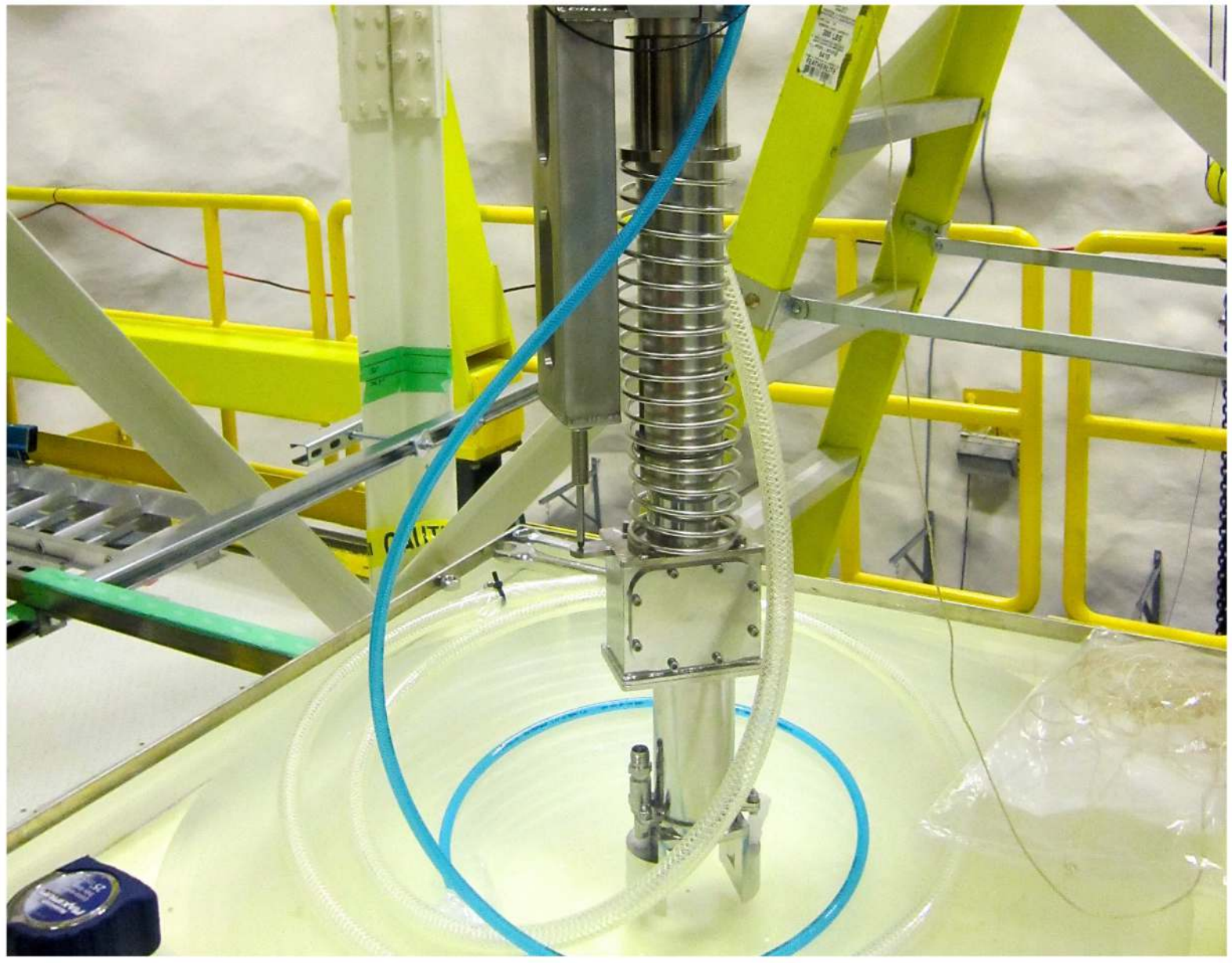


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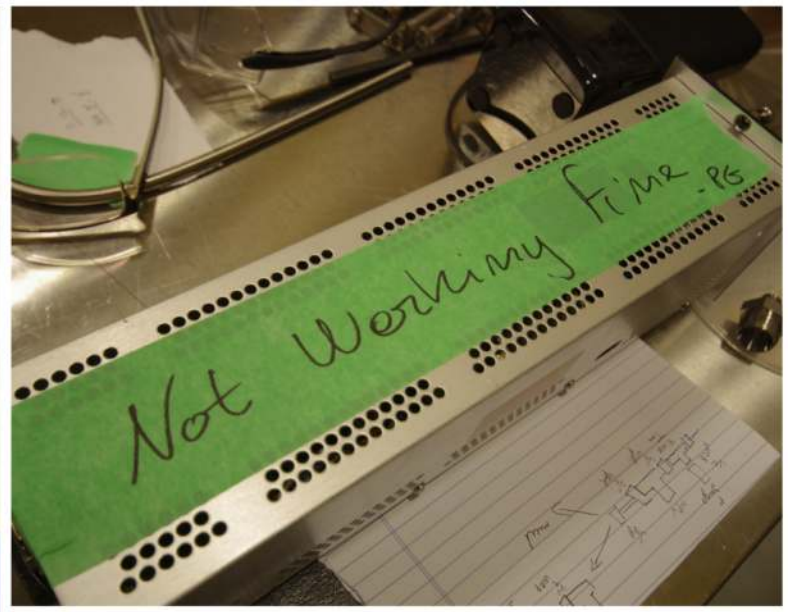
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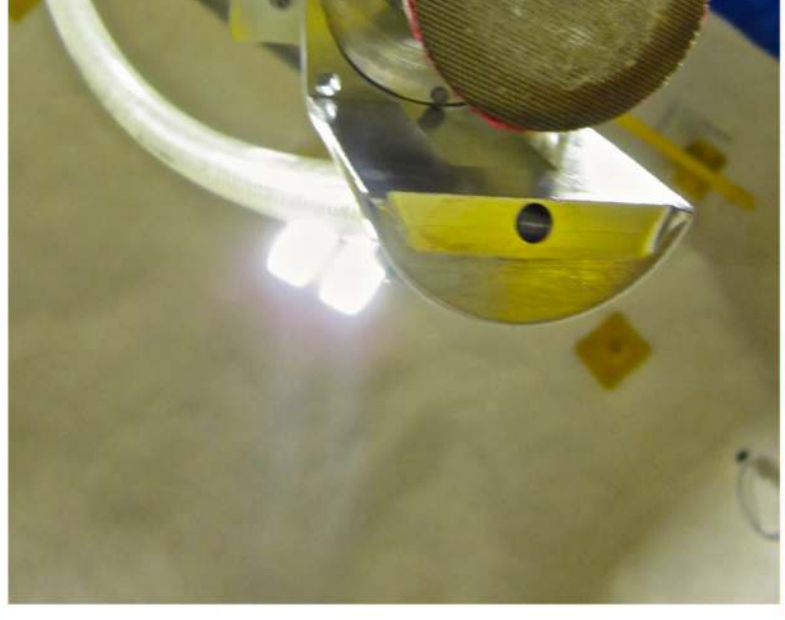
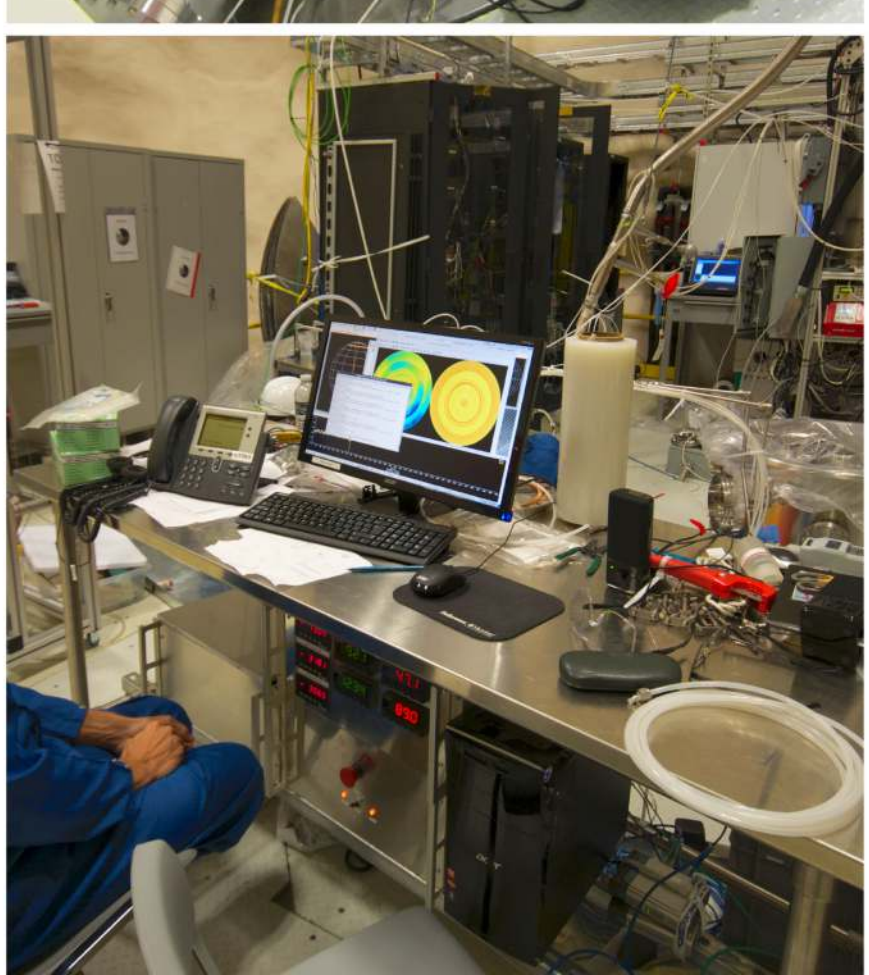
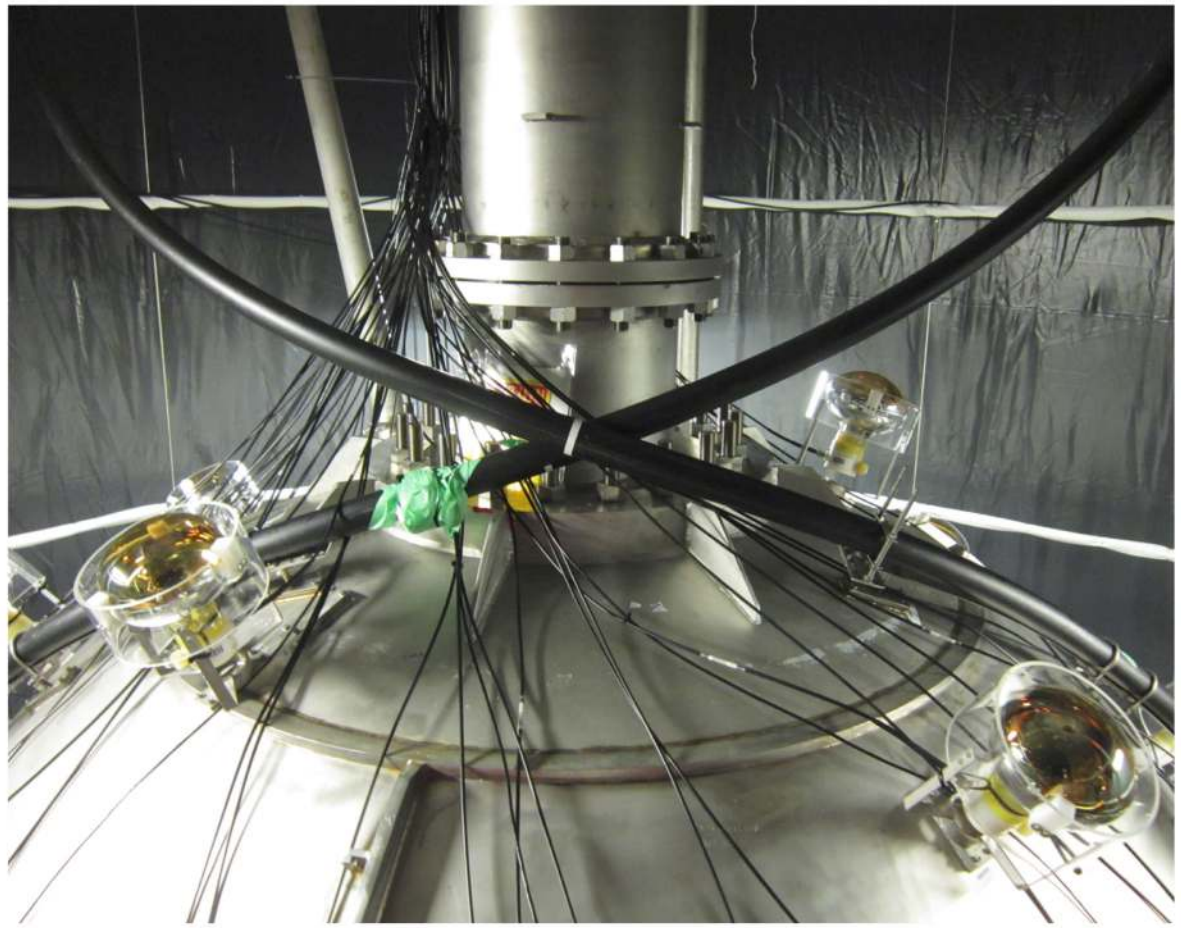
CAUTION






KEEP CLEAR

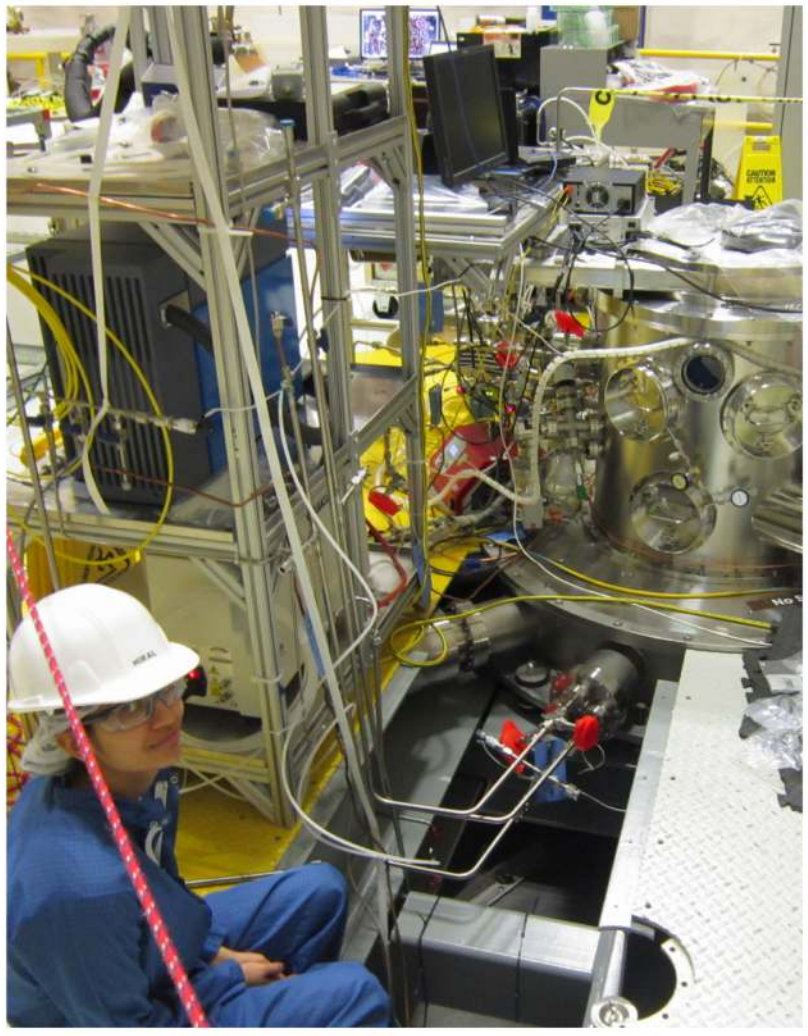

TOP HEAVY!




FEATHERLITE
KEEP
SKYJACK


TOP
FEATHERLITE


CAUTION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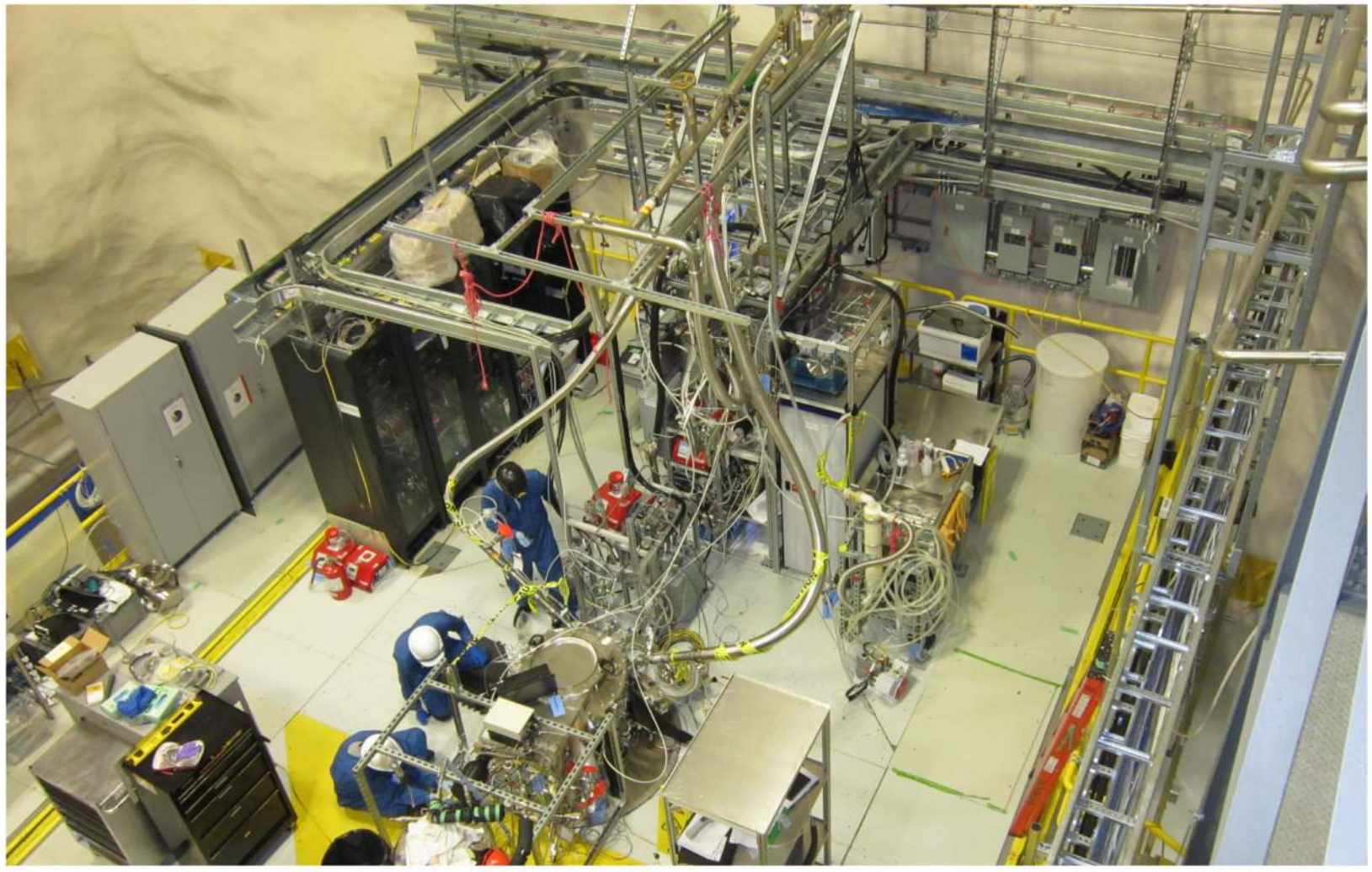
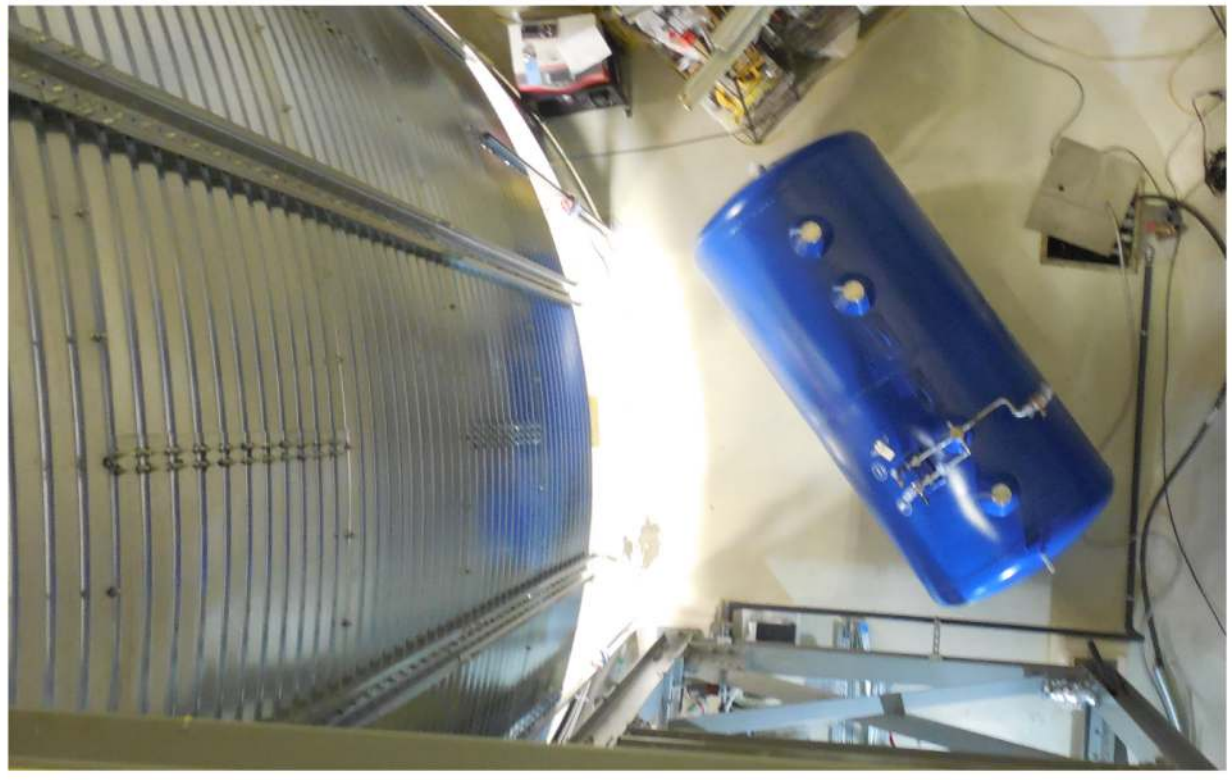



DANGER
OPEN
HOLE


ARGON PURIFIER


8200


ARGON PURIFIER




INSTITUTO DE FISICA
Universidad Nacional Autónoma de México







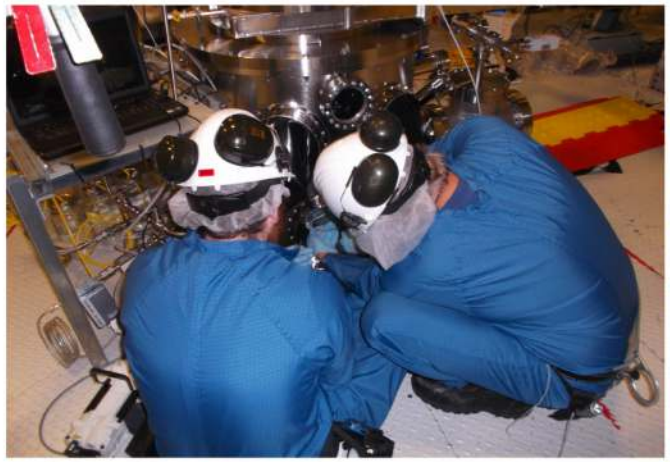


JM
Johns Manville







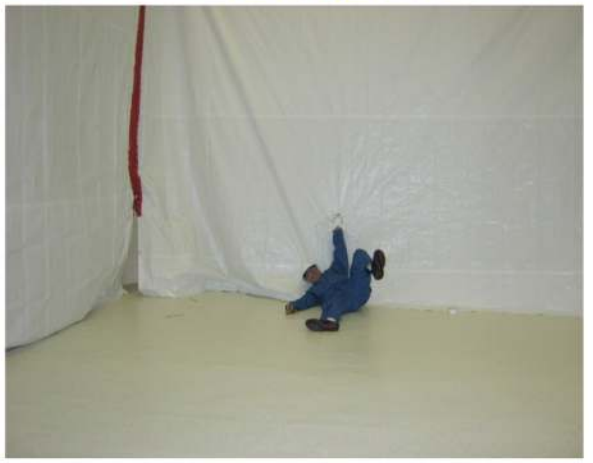












DEAP-3600 detector construction at SNOLAB
Sudbury, Ontario, Canada
2012-2016
Third edition

Created by Tina Pollmann for the DEAP collaboration.