

# LARGE

final assembly

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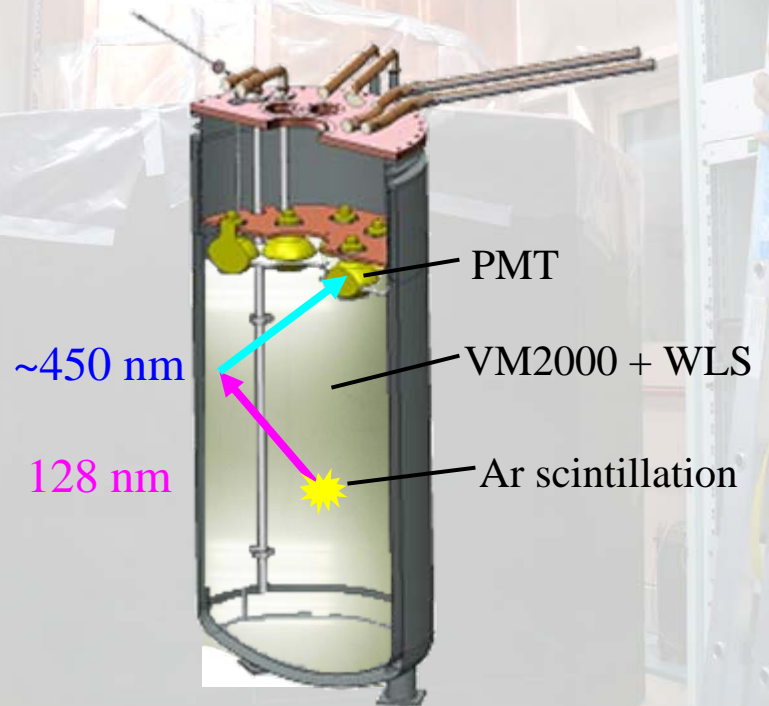
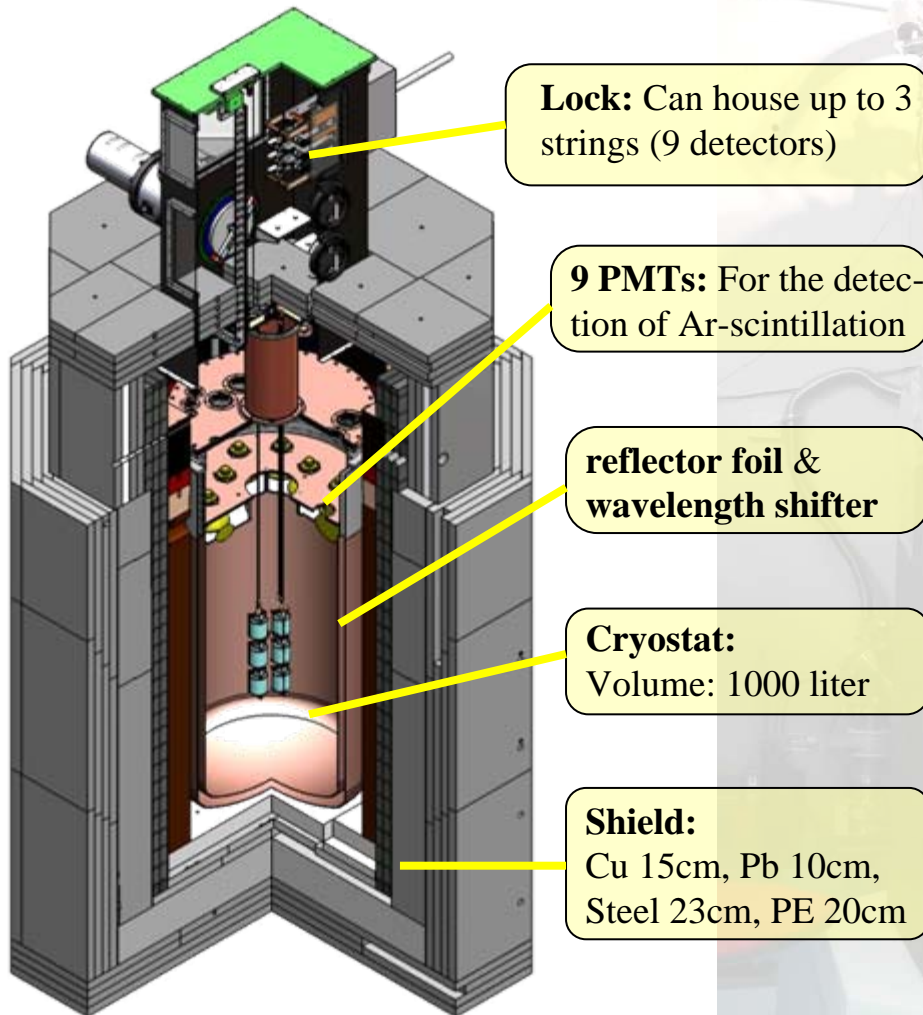
first light

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# Reminder: The LArGe Setup

operation of naked HPGe-crystals in liquid argon  
using argon scintillation light for background diagnostics

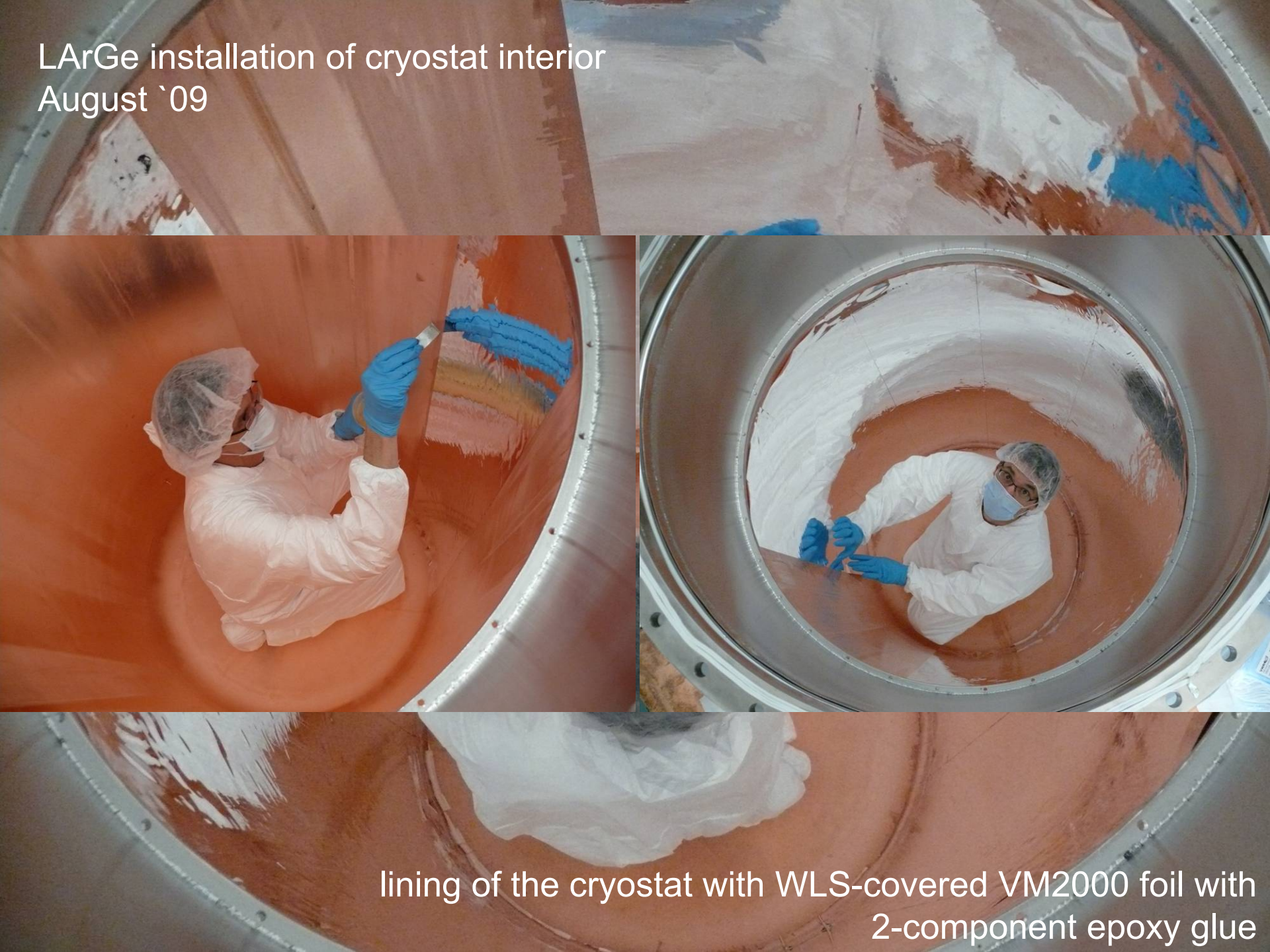


LArGe cryostat installation at GDL  
July '09



insertion of the cryostat into the shielding

LArGe installation of cryostat interior  
August '09



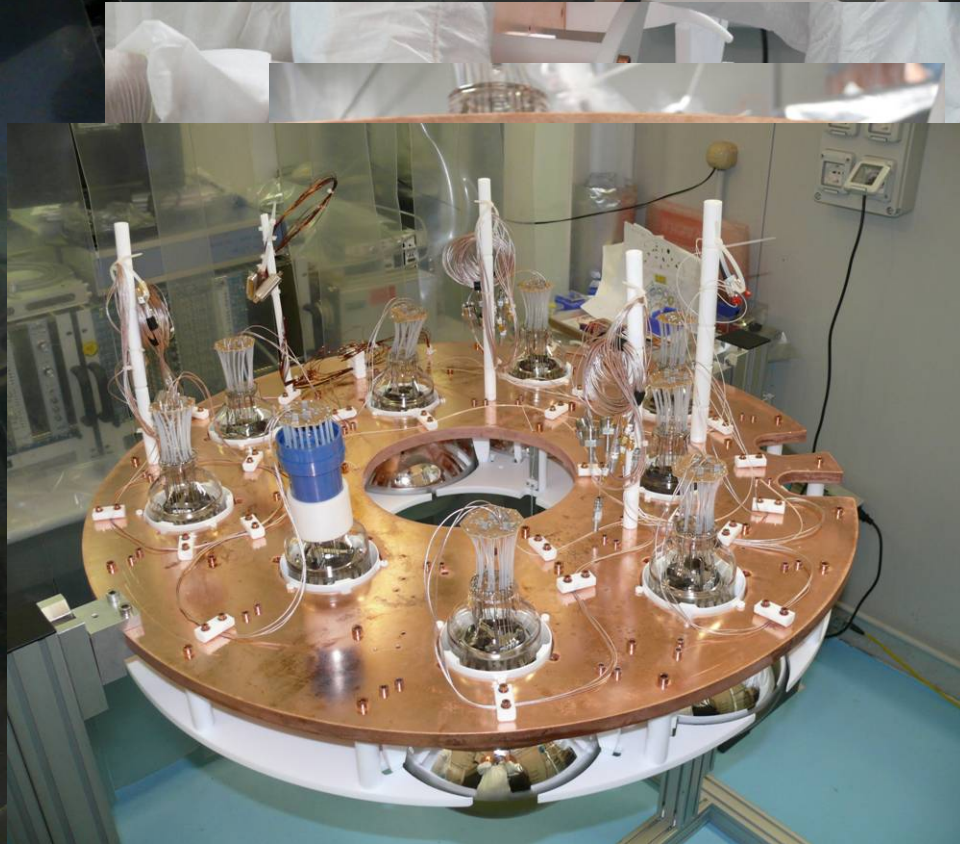
lining of the cryostat with WLS-covered VM2000 foil with  
2-component epoxy glue

LArGe installation of cryostat interior  
August '09

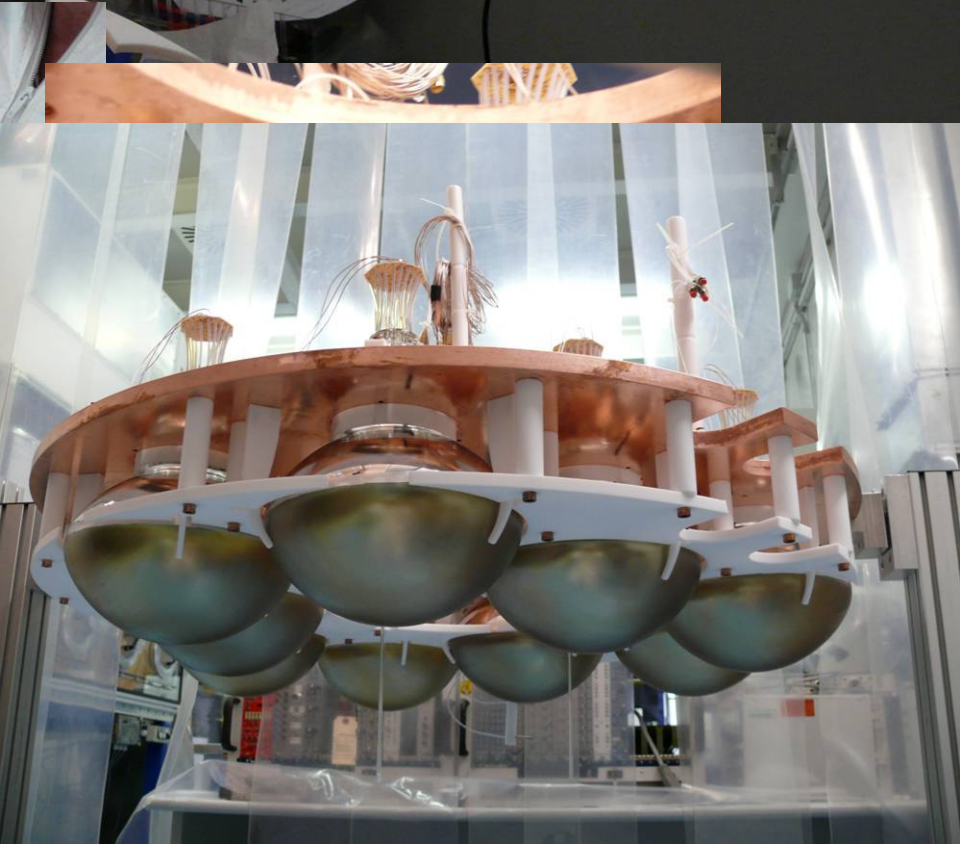


top view into cryostat with VM2000

# LArGe installation of cryostat interior August '09



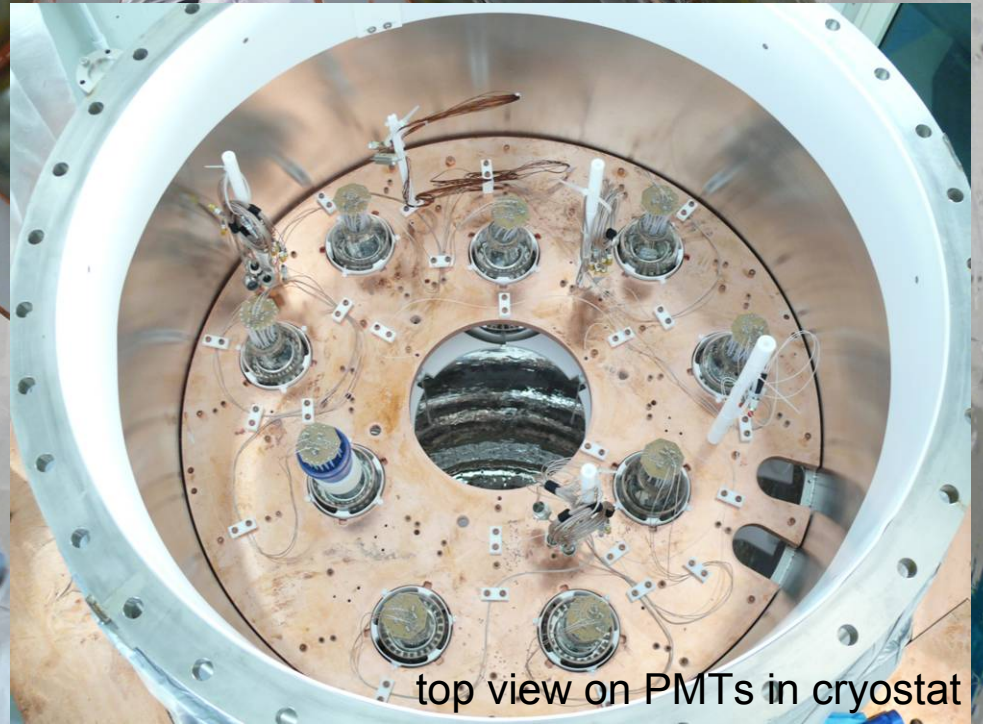
temperature sensors



optical fibres with diffusors

... mounting the PMTs to their holding structure ...

LArGe installation of cryostat interior  
August '09



top view on PMTs in cryostat

... inserting the PMTs into the cryostat ...

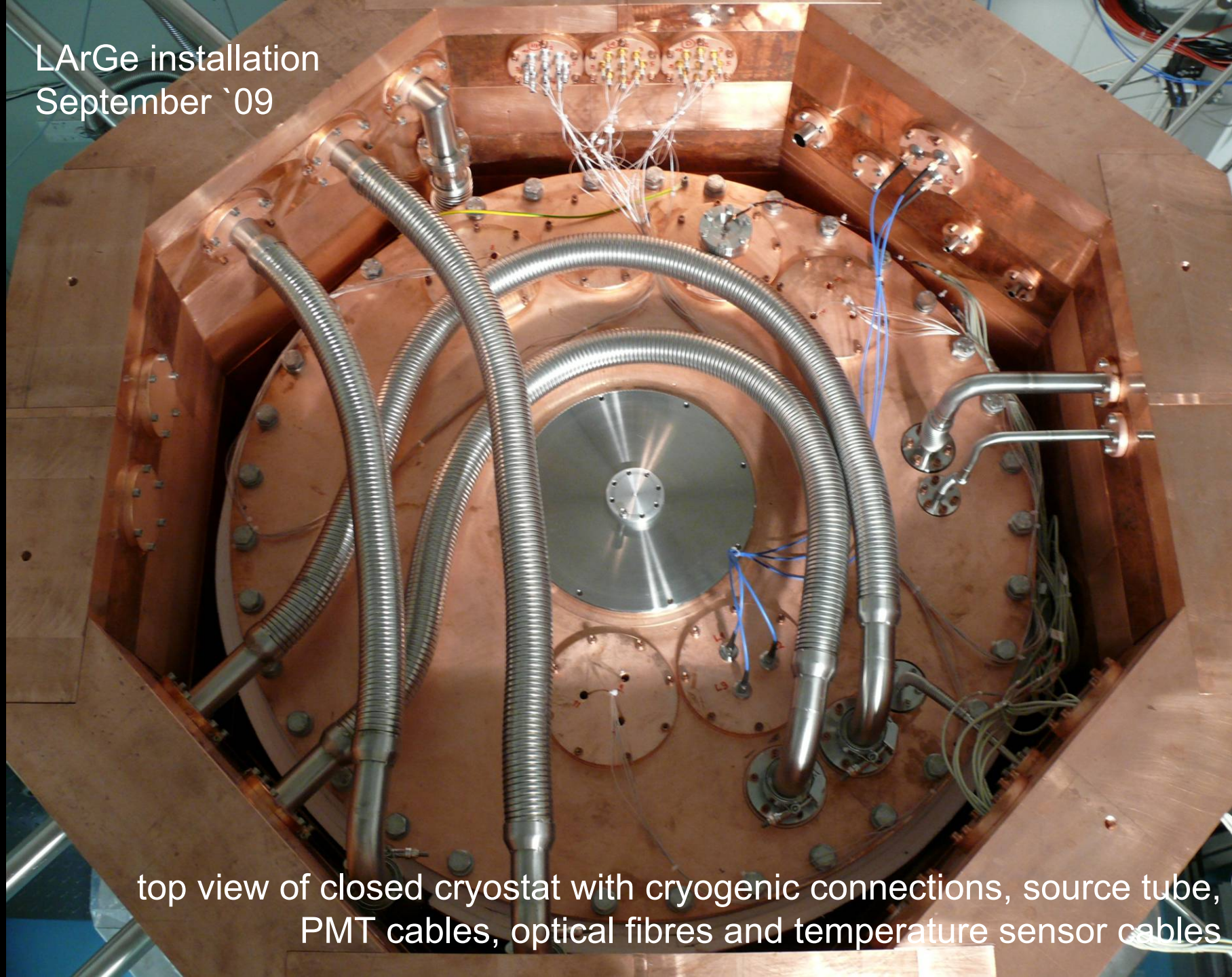
Large installation of cryostat interior  
August '09



bottom view on PMTs in cryostat



LArGe installation  
September `09

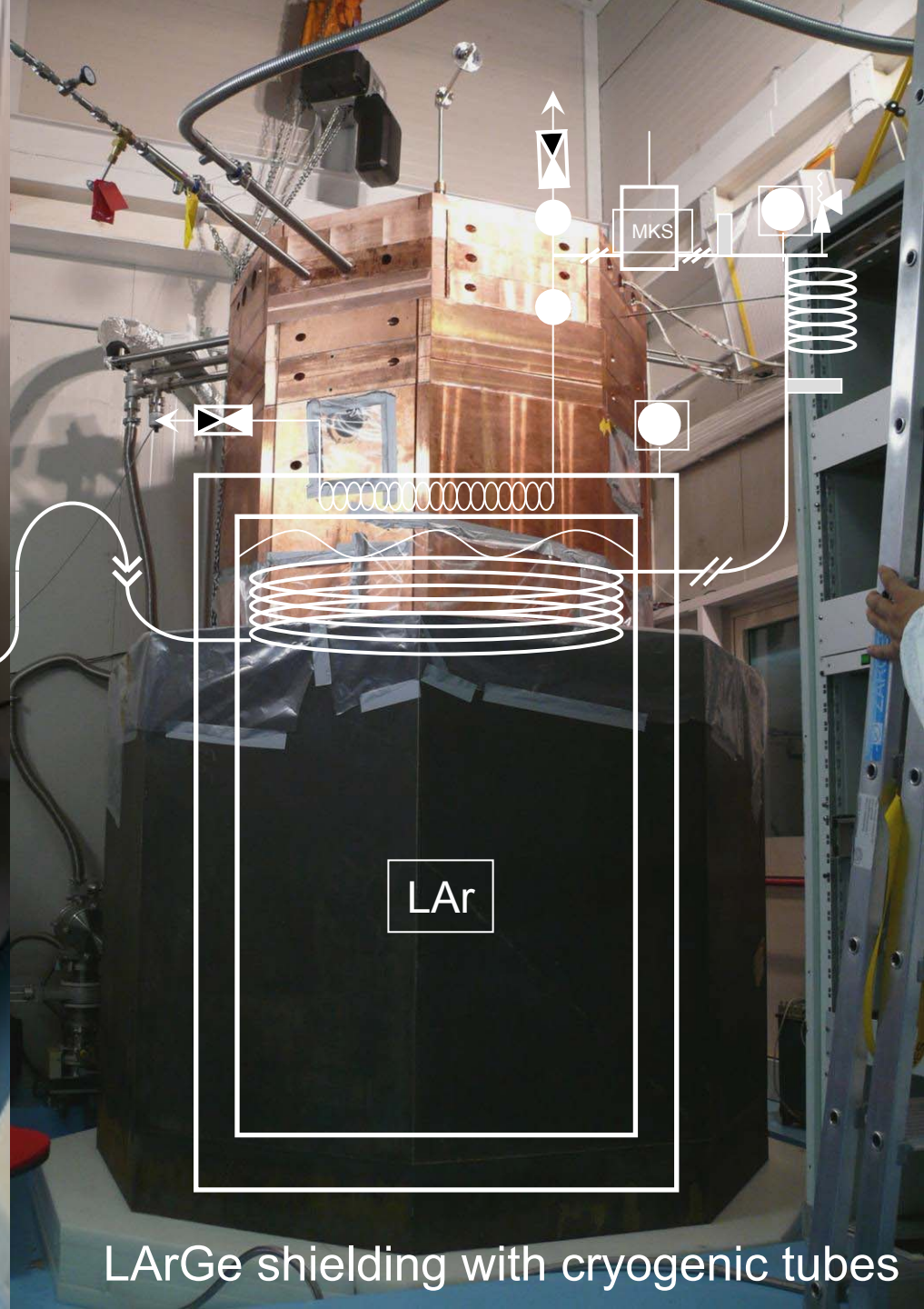


top view of closed cryostat with cryogenic connections, source tube,  
PMT cables, optical fibres and temperature sensor cables

LArGe installation  
September '09







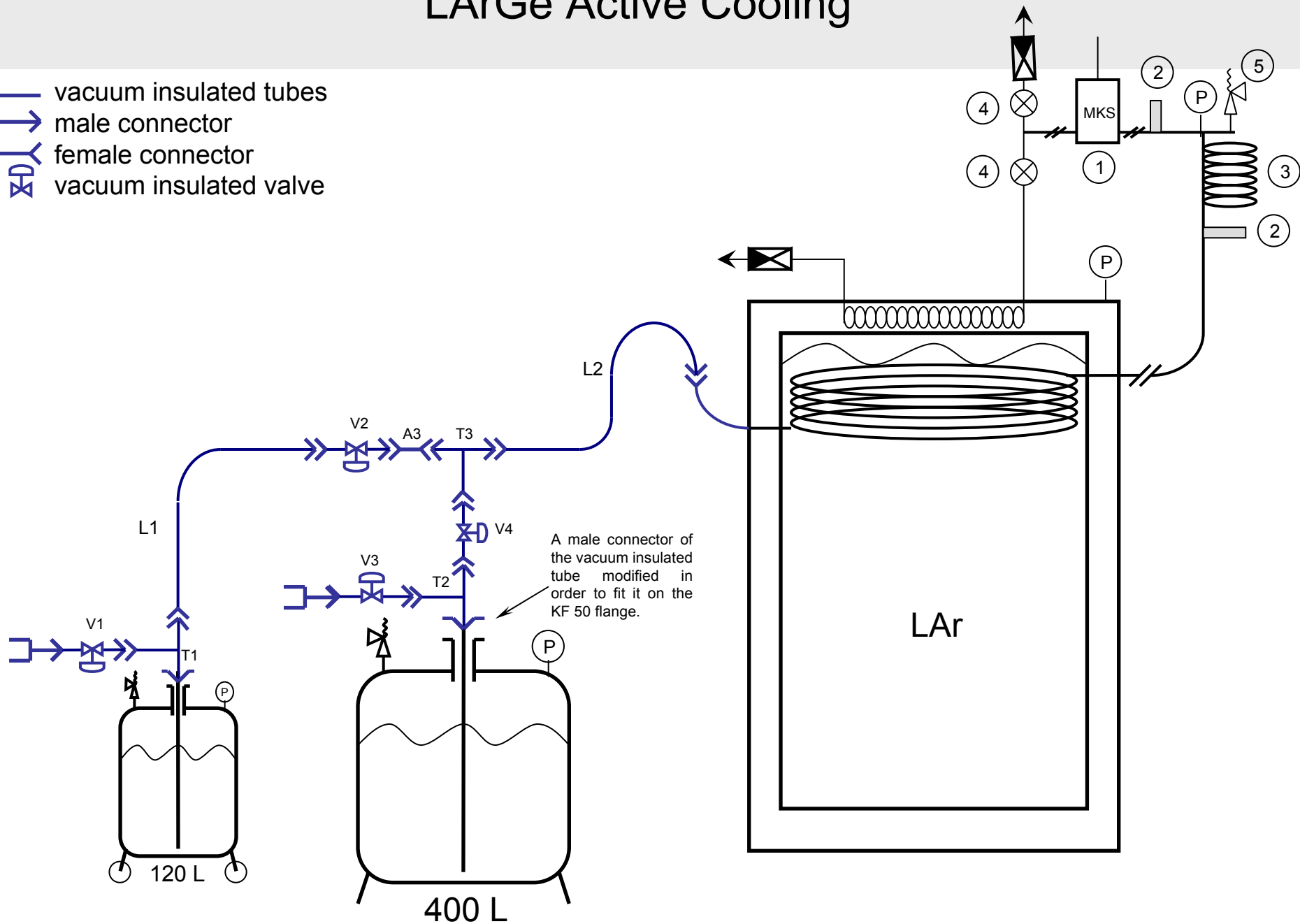
dewars for active cooling



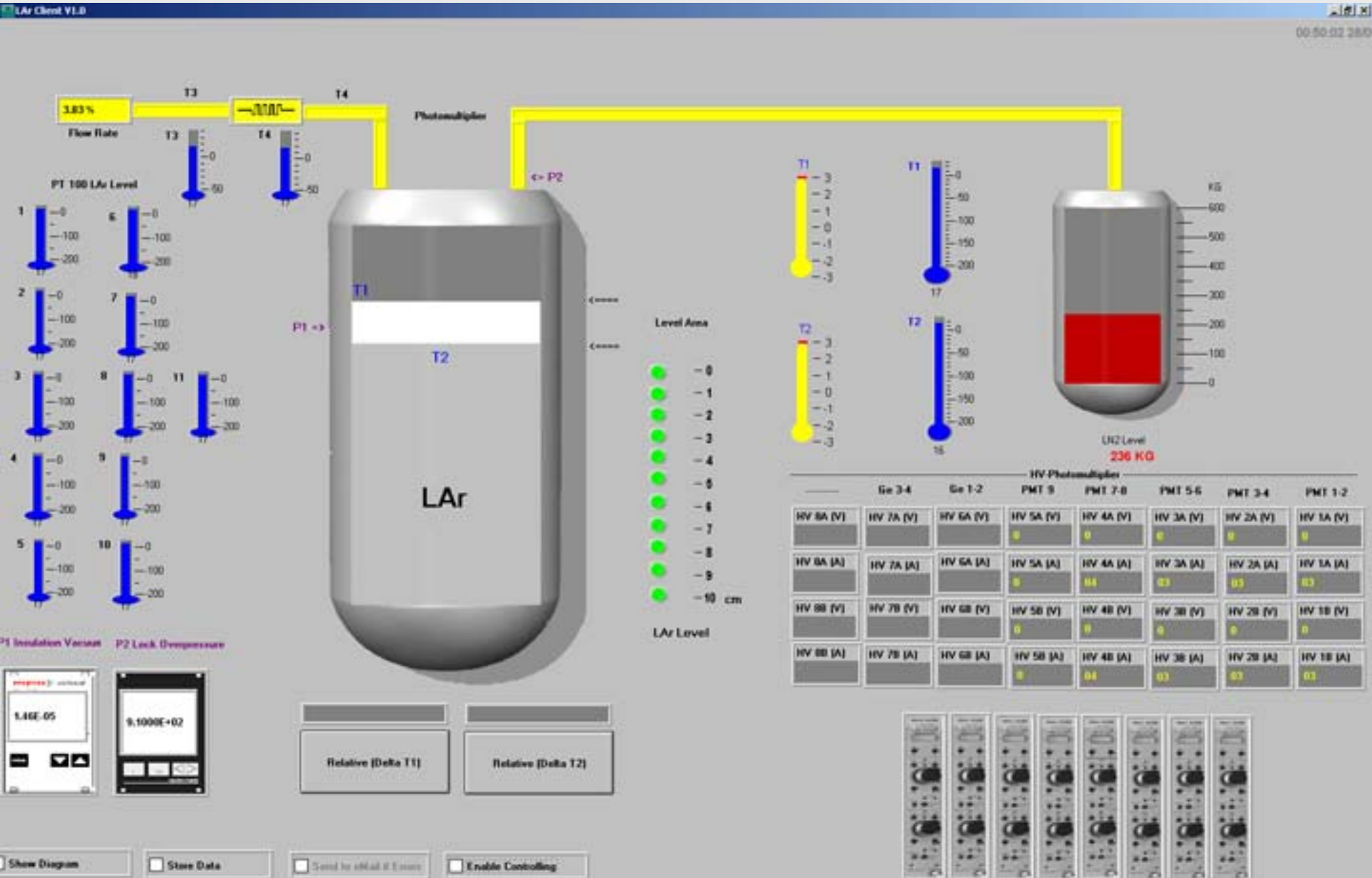
LArGe shielding with cryogenic tubes

# LArGe Active Cooling

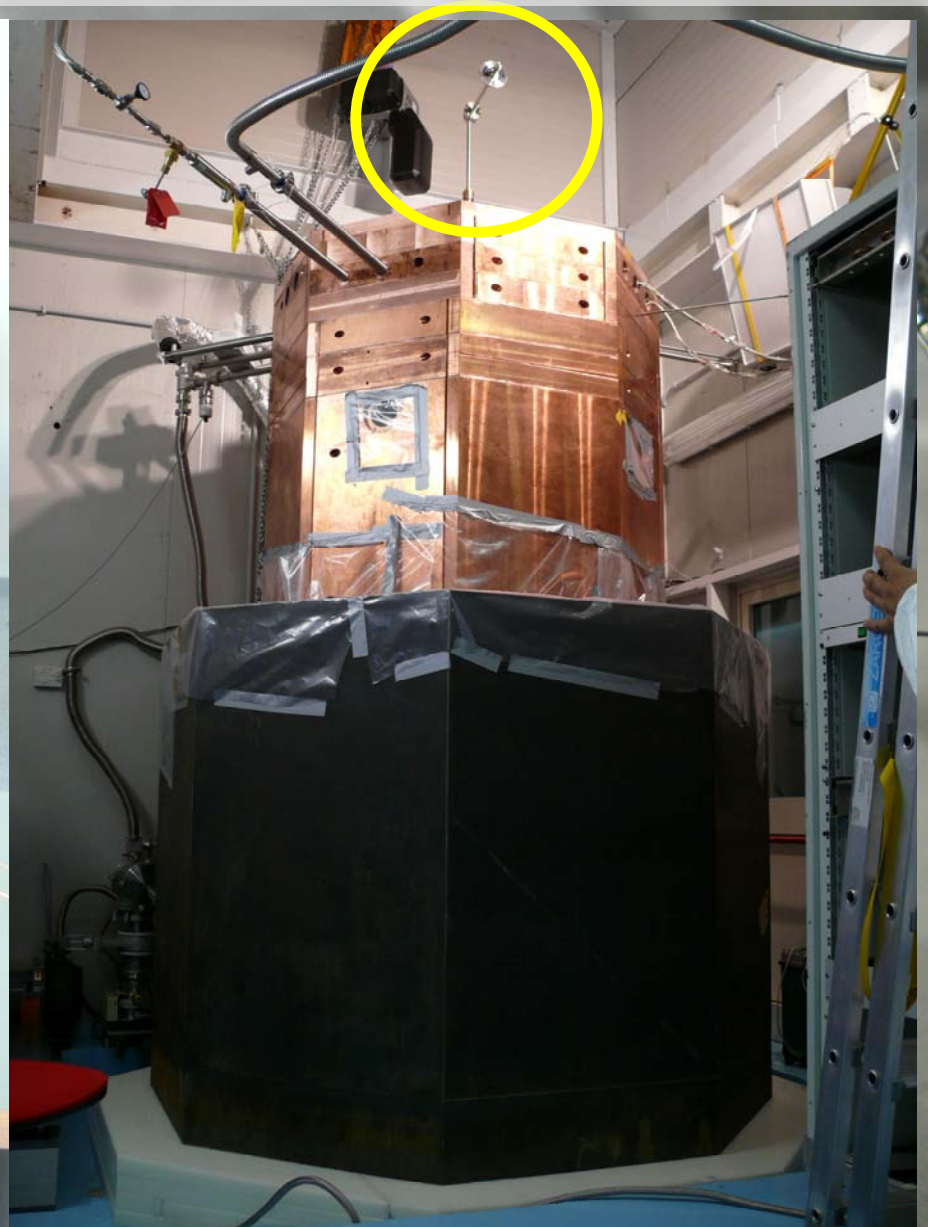
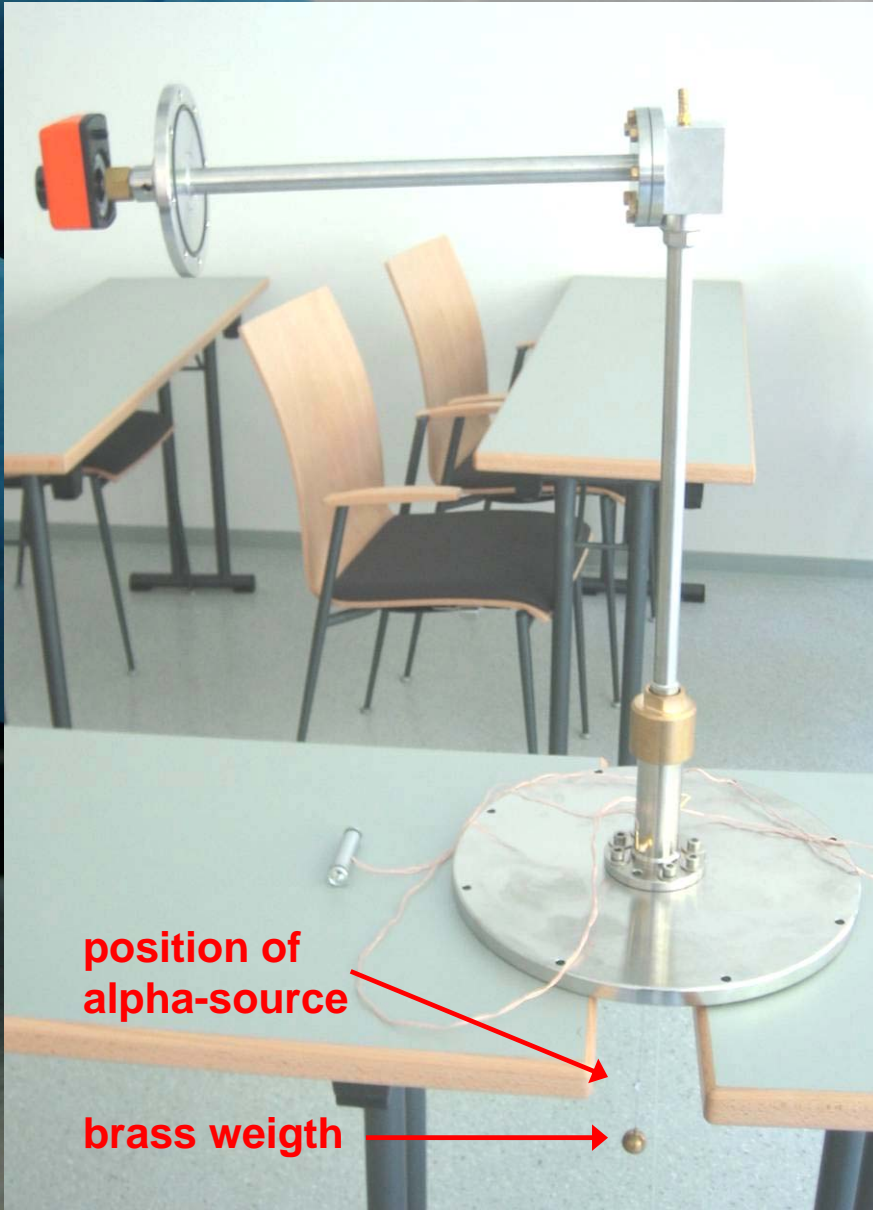
-  vacuum insulated tubes
-  male connector
-  female connector
-  vacuum insulated valve



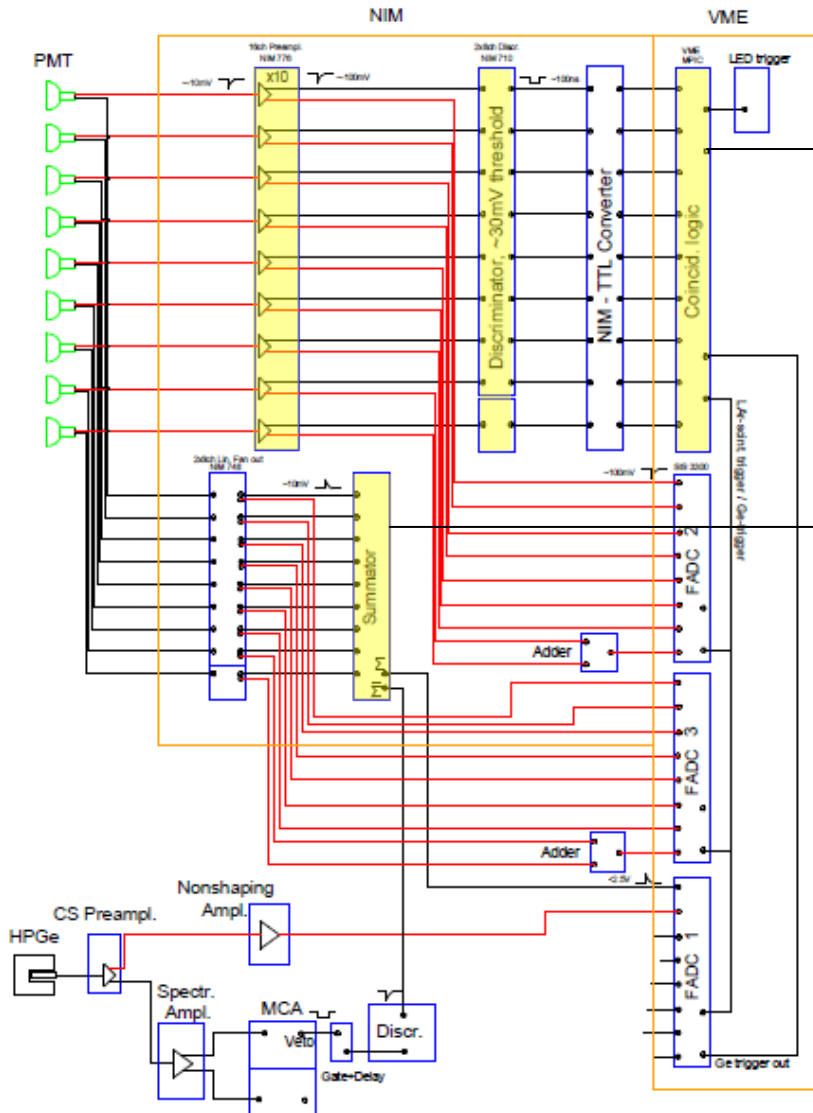
# LArGe Slow Control



# Alpha-Source Manipulator

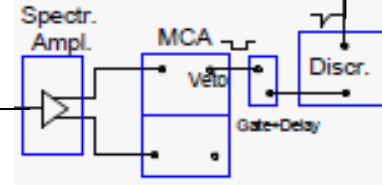


# LArGe Electronic Scheme



trigger condition:  
 $\geq 4$  out of 9 PMTs above threshold

anode

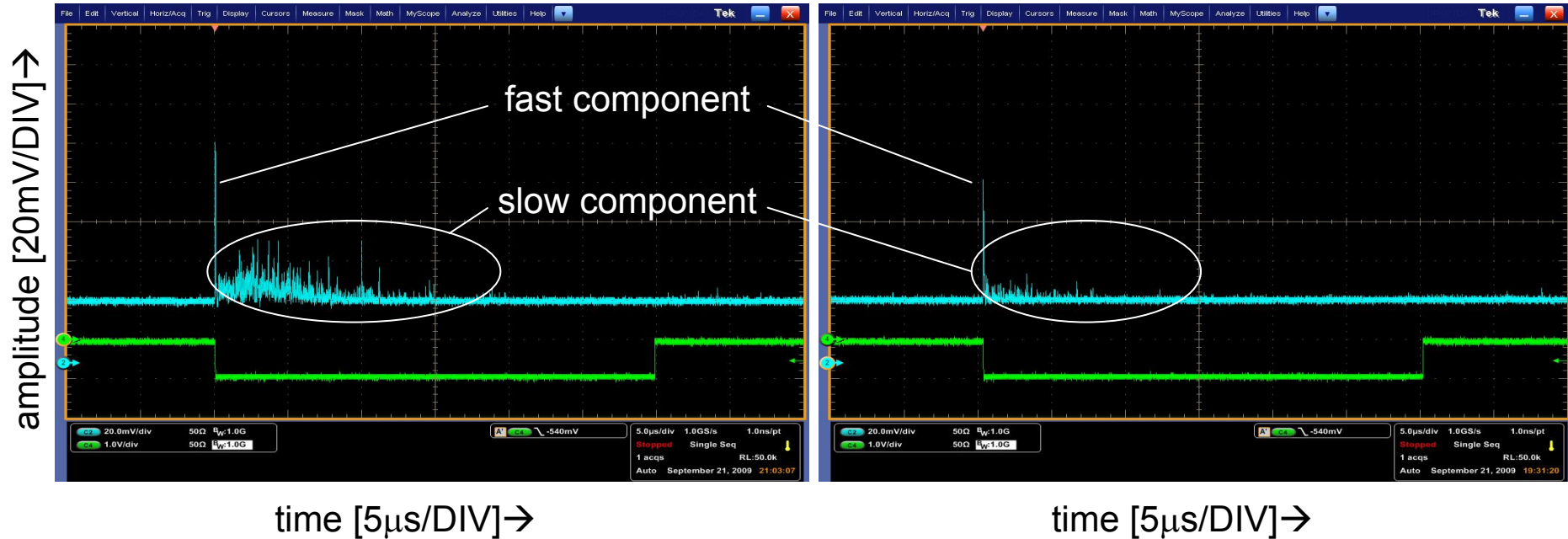


recorded signal in MCA:  
 analog sum of the dynode signals

last dynode

# Scintillation Light in Argon Gas from Gd-148 $\alpha$ -Source

Examples of analog sum of PMT dynode signals as seen by oscilloscope using 4-fold trigger condition:



➤ fast & slow component of scintillation in GAR observable!

➤ 4-fold-trigger rate:

- ~26 Hz (with  $\alpha$ -source)
- 1.2 Hz (w/o  $\alpha$ -source)

(single PMT's dark rate ~20 kHz)

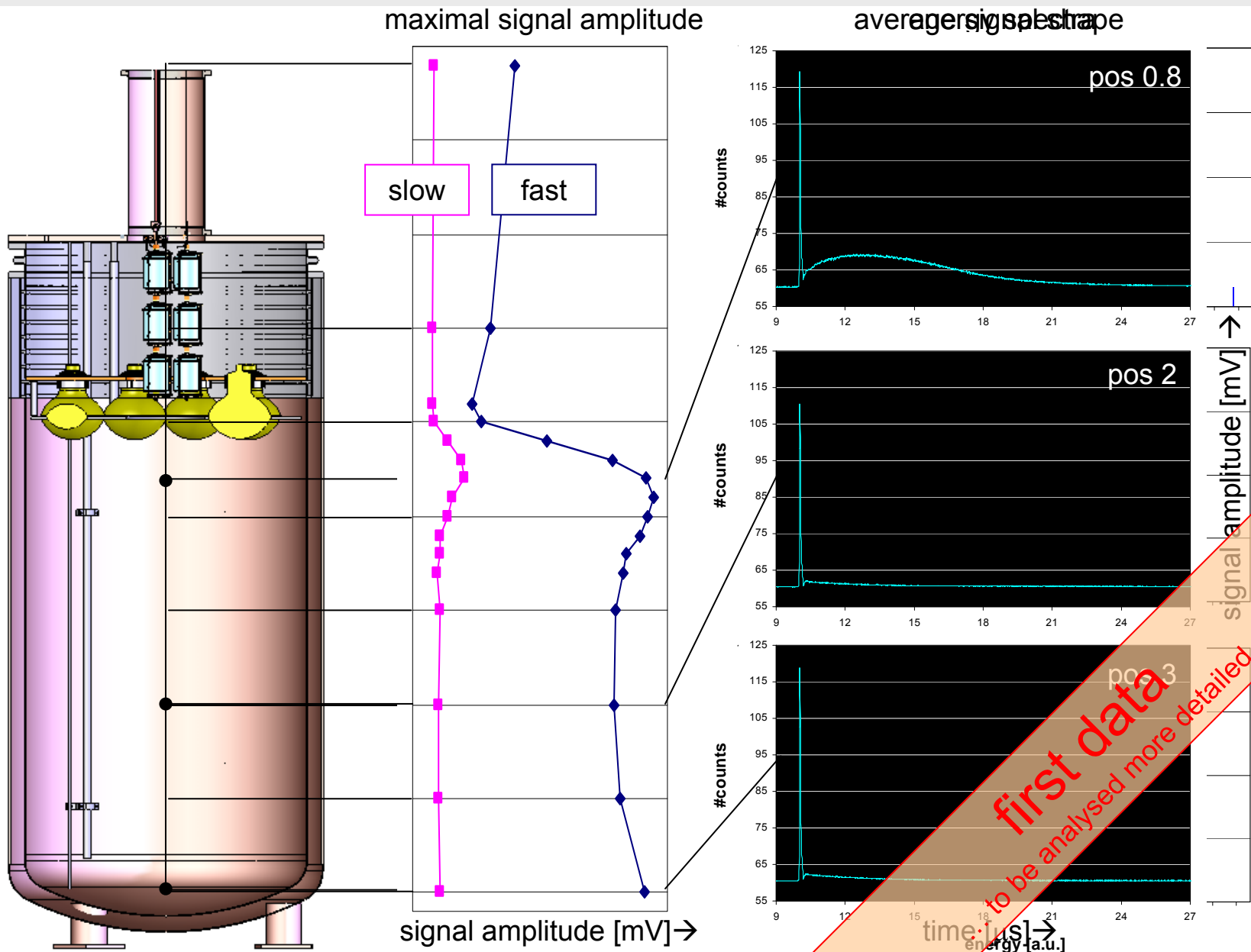
➤ fast component pulse height ~60mV in GAR is much smaller than in LAR ~O(V)

➤ slow component is position dependent

# Scintillation Light in Argon Gas

## Gd-148 Alpha-Source Scan

scan with  $\alpha$ -source in different positions along center axis  $\rightarrow$





# Conclusions

reflector foil and PMTs  
mounted and tested  
successfully

installation of LArGe  
cryostat and it's  
infrastructure  
completed

we see  
scintillation light in  
gaseous argon!

so, what are we  
gonna do next ?!

Let's fill the cryostat with liquid argon!

