Current status of prototype detector testing

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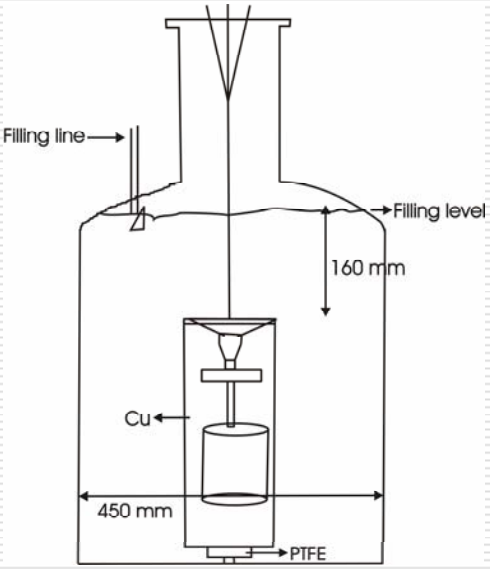
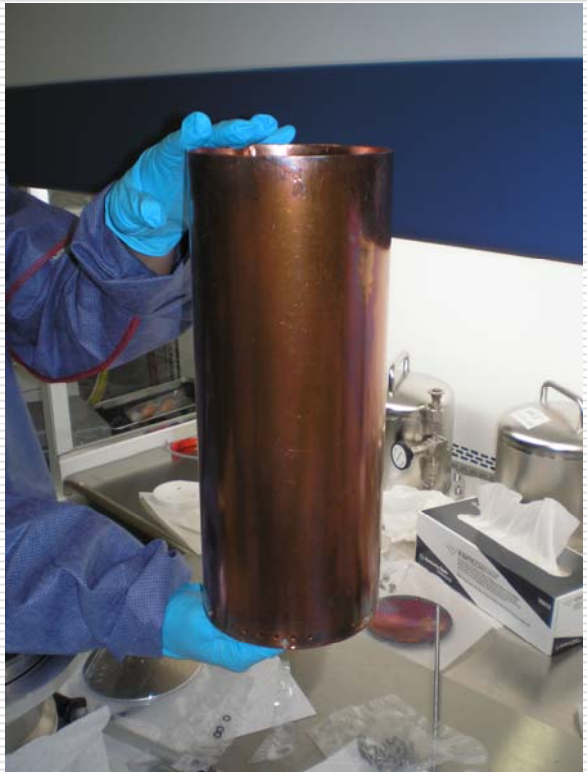
New design of the dewar

- Copper cylinder
  - Infra-red shielding
- Filling from top
  - Prevent violent filling
  - 1 filling / week



Mounting of the dewar



Mounting of the copper cylinder

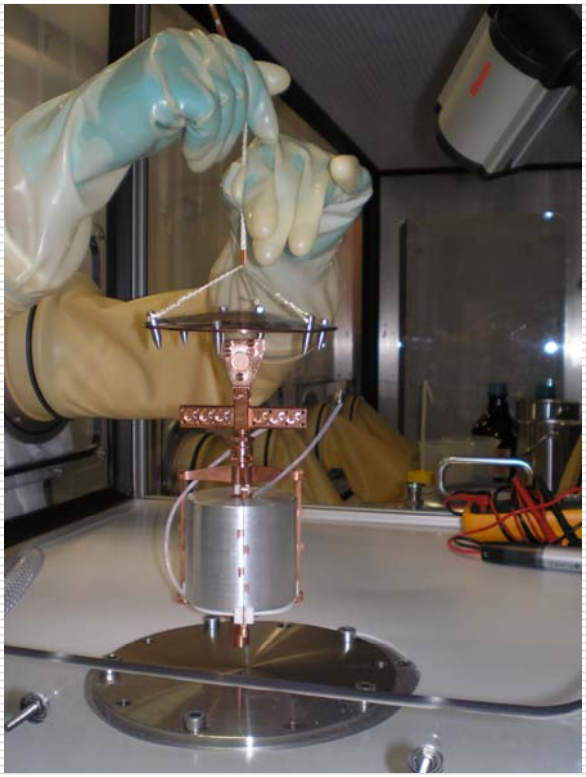
Suspension system

LAr weighing system

- Temperature sensors remov
- 3 weighing cel installed
  - Precision of 200 g (~0.1 cm height)
  - Evaporation rate : 2 cm/day → 4.5 kg/day

Mounting in ''Rn-free'' clean bench

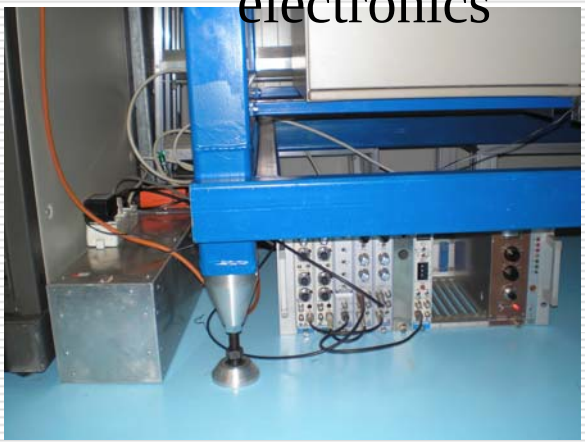
- Clean room level



''Rn-free'' test bench

- Radon concentration
  - Reduced by applying a N_2 flux
  - C_{Rn} monitored with a 7 L Lucas cell
    - $C_{Rn} \sim 2$ Bq/m^3 with high N_2 flux
    - $C_{Rn} \sim 4$ Bq/m^3 with N_2 flux of 1 L/min
  - Plan
    - Higher N_2 flux
    - Use of electro-static chamber for monitoring $C_{Rn} < 1$ Bq/m^3

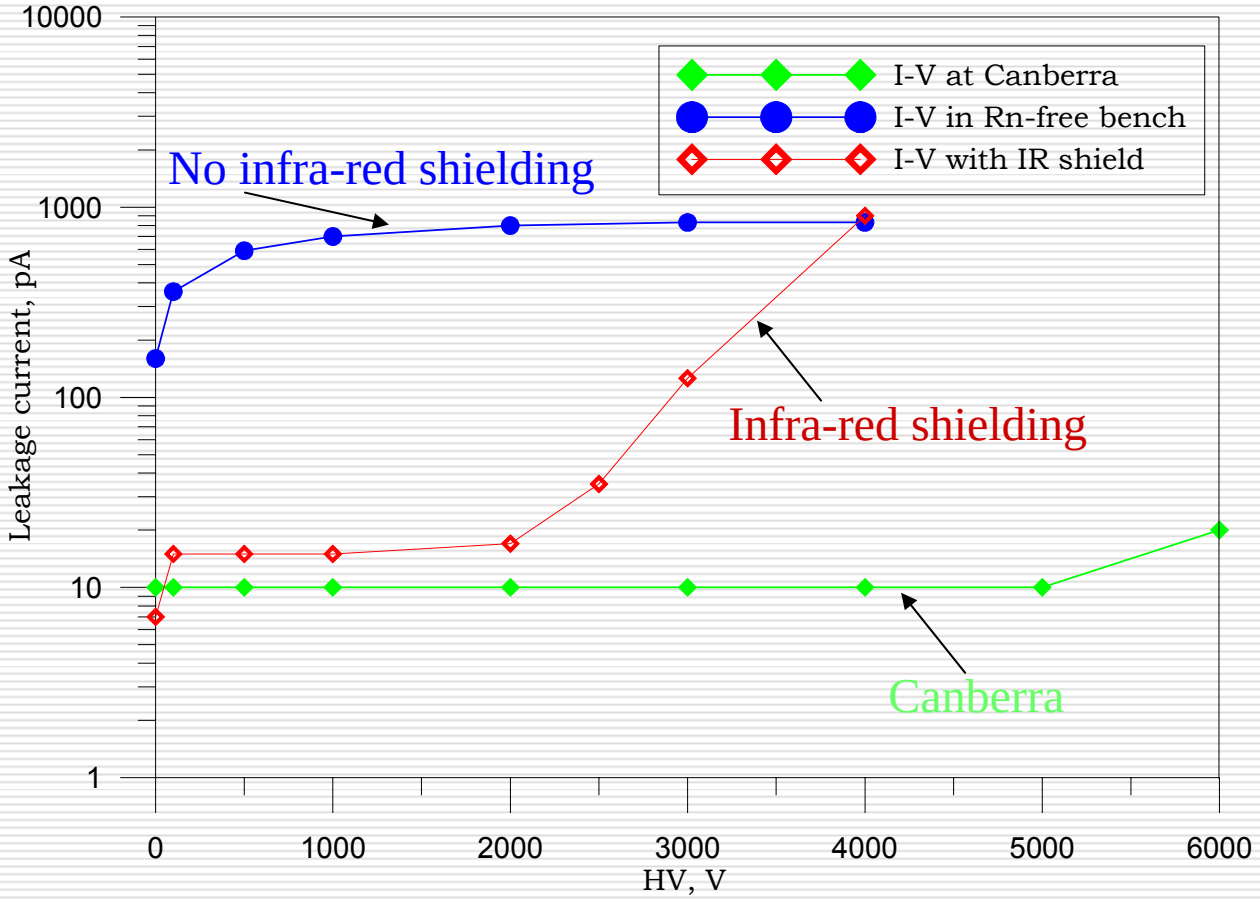
Lucas cell and electronics



Test with prototype diode

- In the ''Rn-free'' detector test bench
  - Mounting
  - Signal to high voltage resistivity measurement
  - Forward resistivity measurement
  - I-V curve measurement
    - Infra-red shielding efficient
    - 4^{th} cooling cycle → Increasing of current at 3000 V

I-V curve


10000
1000
100
10
1
Leakage current, pA
0
1000
2000
3000
4000
5000
6000
HV, V
I-V at Canberra
I-V in Rn-free bench
I-V with IR shield
No infra-red shielding
Infra-red shielding
Canberra

Spectroscopy measurement

Date	HV (Volt)	FWHM (keV)	Shaping time (μs)	Cable length (cm)
September 06	4000	4.5	1.5	80
November 06	4000	4.1	3	100

Resolution at 1.332 MeV with 1 m signal cable ⇨ 4.1 keV

Summary

- Improved test bench dewar installed
  - Infra-red shielding
  - Filling from the top
  - LAr weighing system
- Full prototype testing in ''Rn-free'' clean bench performed
  - Mounting and measurement with gloves feasible
  - Energy resolution obtained : 4.1 keV (1 m cable and warm FET)
- Set up ready for testing of enriched detectors