NIKHEF update

January 2007

Collecting the good news

1) Gas flow
2) Oxygen
3) Training
4) Heating (HD-Mod 20)
5) Flushing (Mod 3)

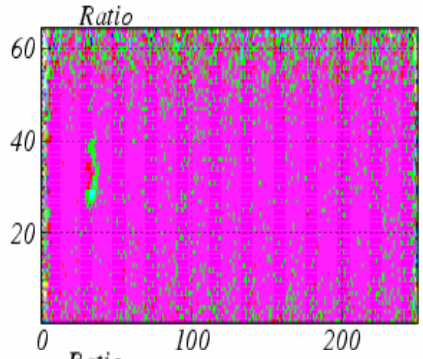
- Find component that causes the damage

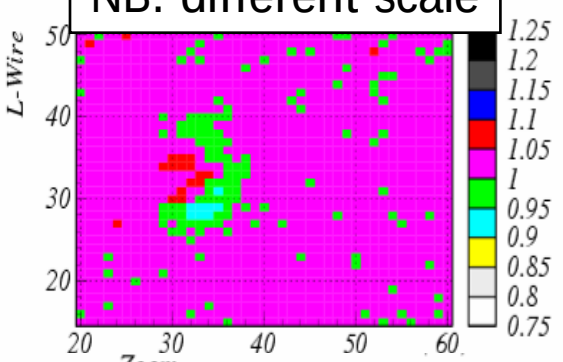
1) Gas Flow Dependence

Conditions:
- Flow: Ar/CO_2 70/30
- 2mCu, ^{90}Sr source
- 1600V
- 20 l/hr vs 5 l/hr

Conclusions:
- **Factor 2 less damage**

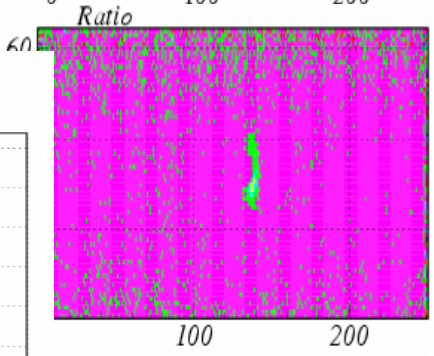
19 hrs,
5 l/hr

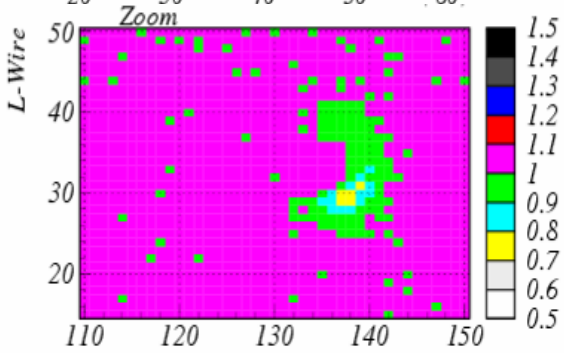




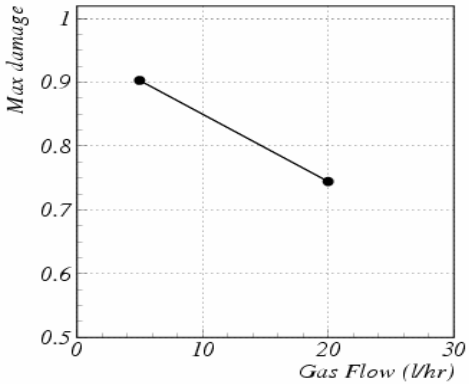
NB. different scale

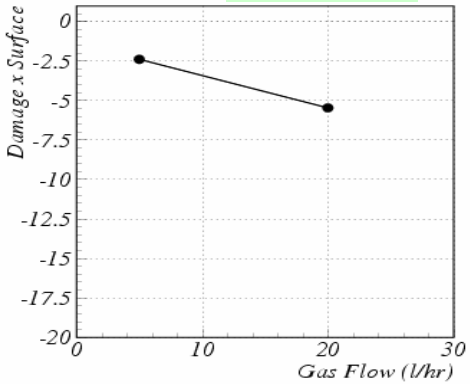
19 hrs,
20 l/hr
(test 6)

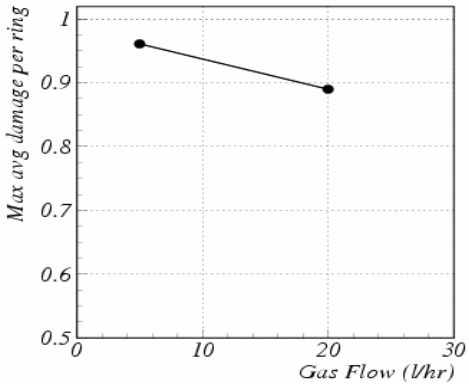


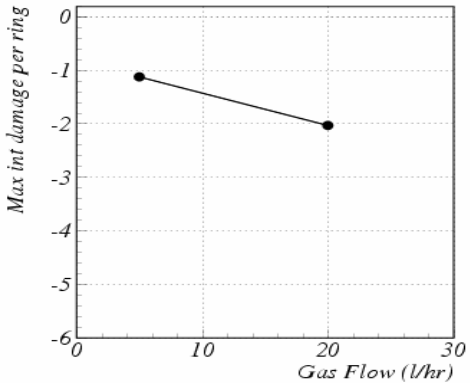


Damage vs Gas Flow









2) Flush with Oxygen

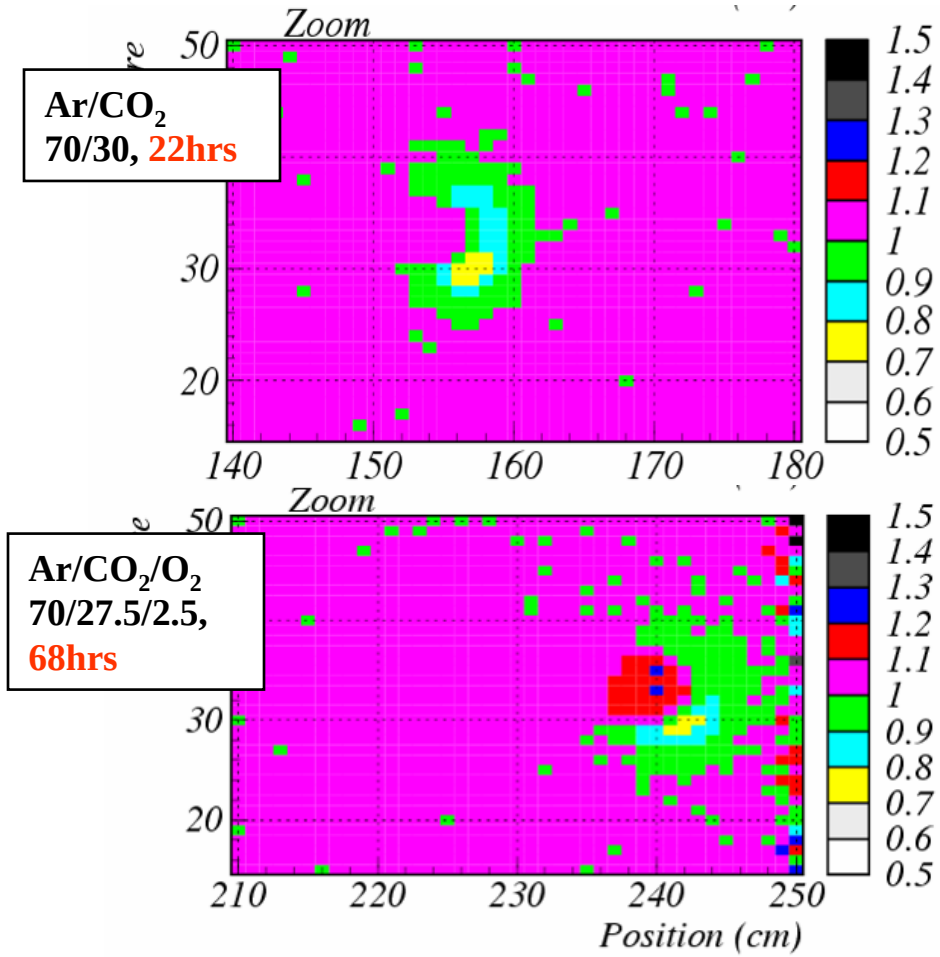
Damage	Ar/CO2 70/30, 22hrs, 20 l/hr		Ar/CO_2/O_2 70/27.5/2.5 , 68hrs, 20 l/hr	
	Rel Gain	Loss	Rel Gain	Loss
I. HD	0.82	-18%	0.88	-12%
II. Max	0.70	-30%	0.74	-26%
III. Sum		-8.8%		-5.2%

Conditions:

- Flow: **Ar/CO_2/O_2 70/27.5/2.5 %**
- 2mCu, ^{90}Sr source, 68 hrs

Conclusions:

- Oxygen ages slower by factor 3
- Larger flow, larger ageing



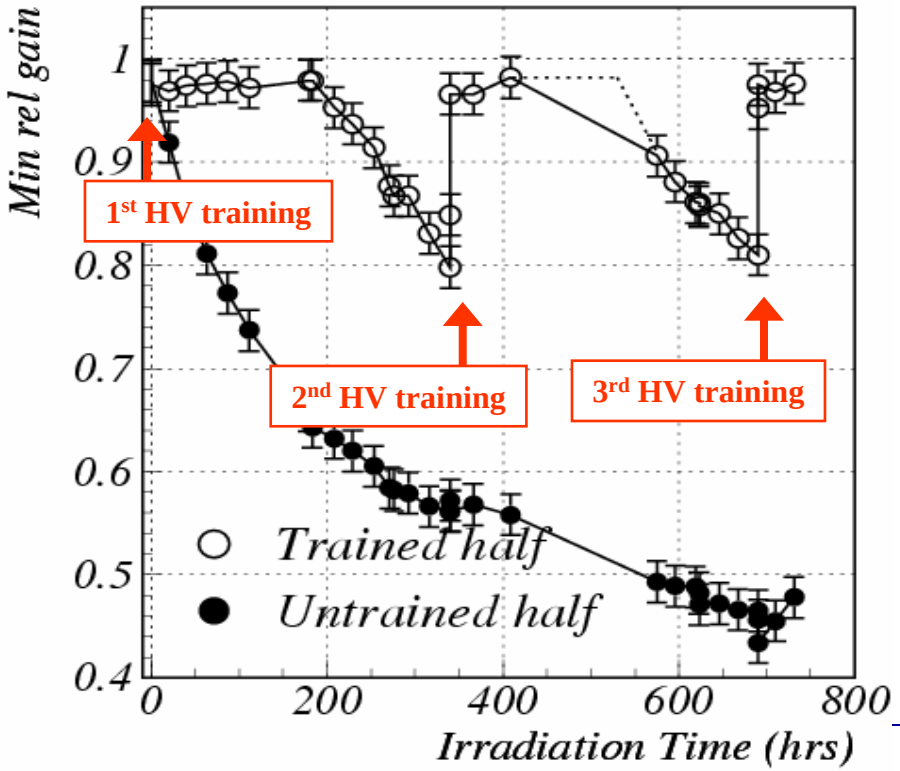
3) HV Training

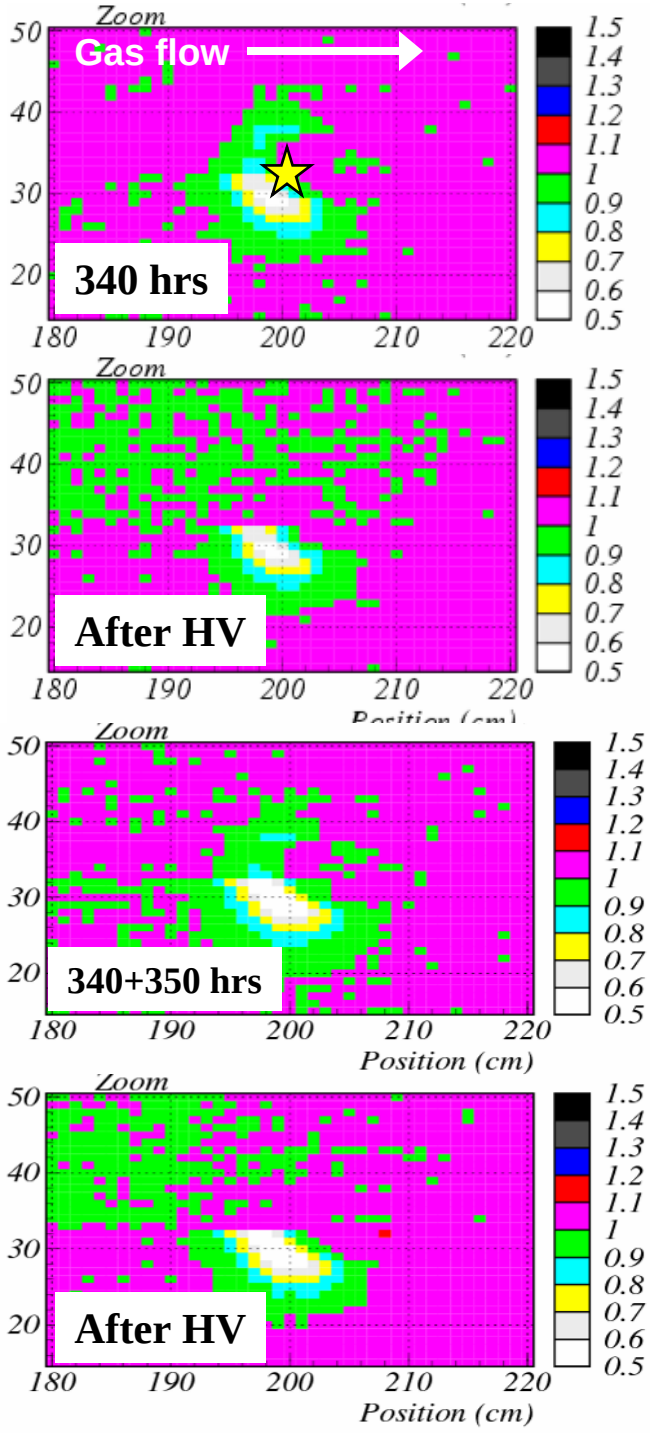
Conditions:

- Flow: Ar/CO_2 70/30, 20 l/hr
- Irradiation: 2mCu, ^{90}Sr source
- HV training ~20hrs at ~1900V → 10µA/wire

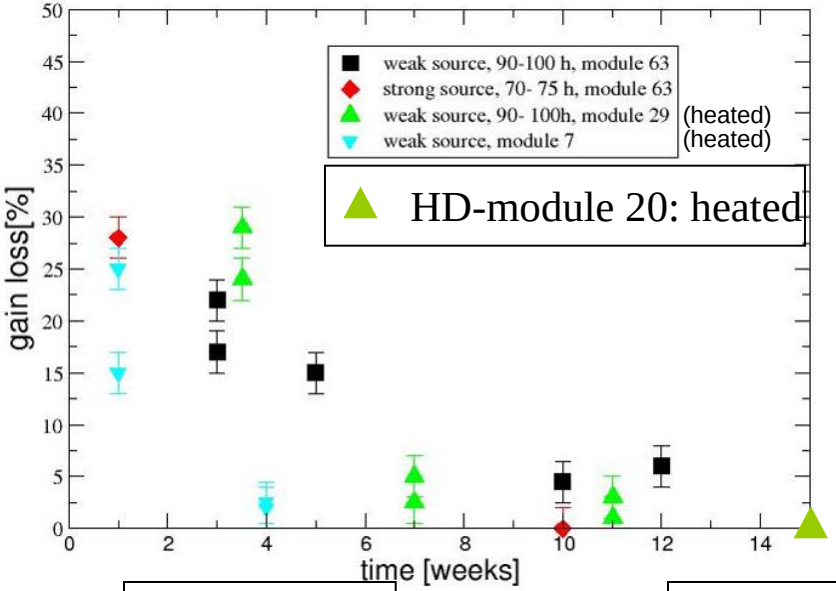
Conclusions:

- HV training repeatable

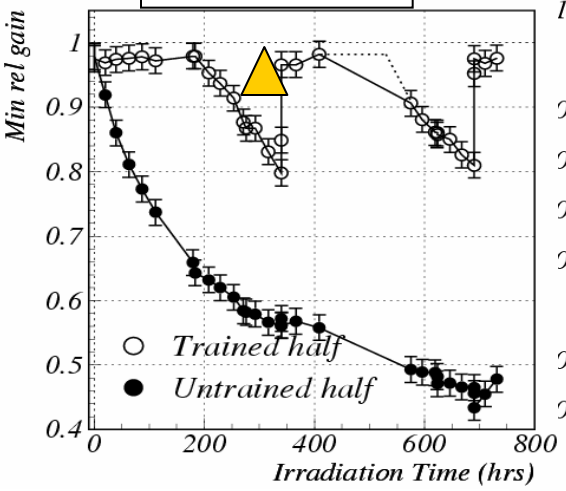




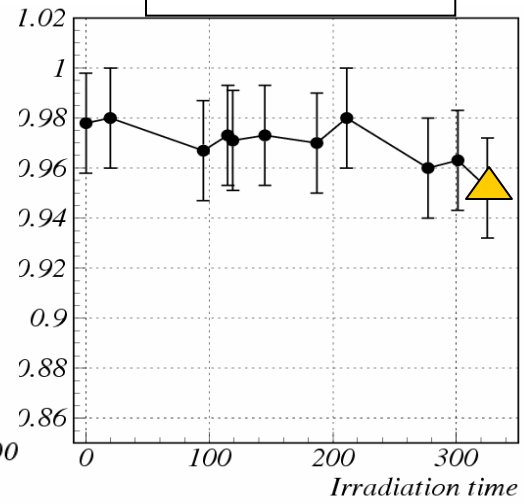
4) Heated module: HD-Mod 20

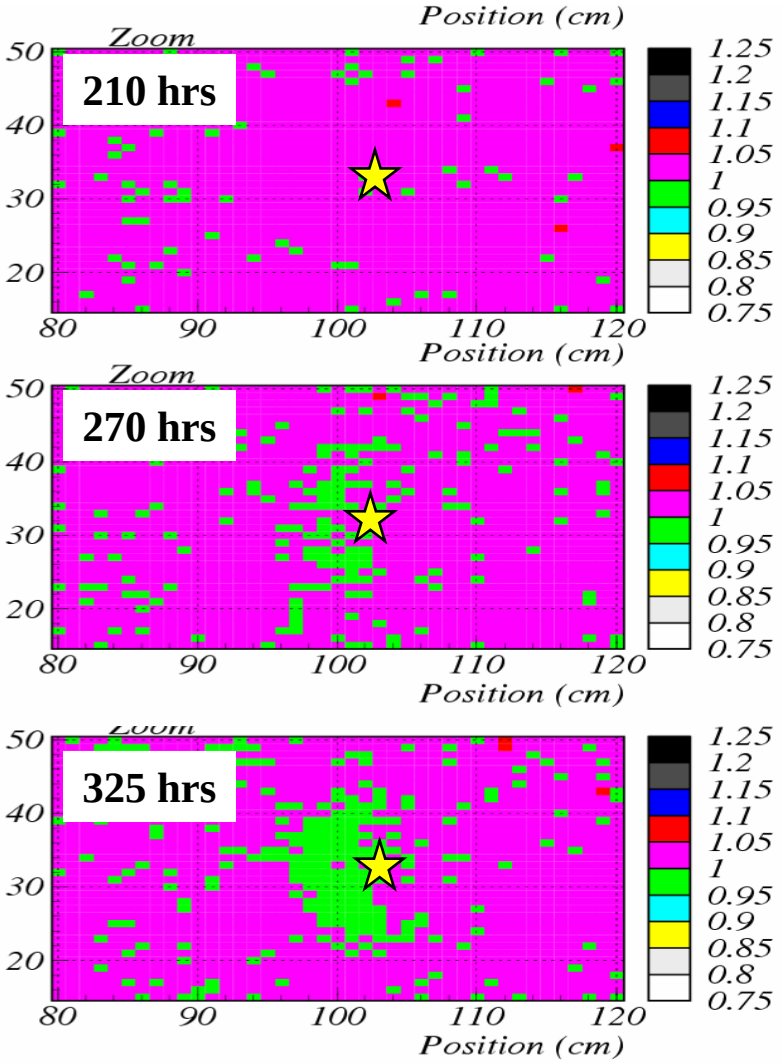


NI-module 3:



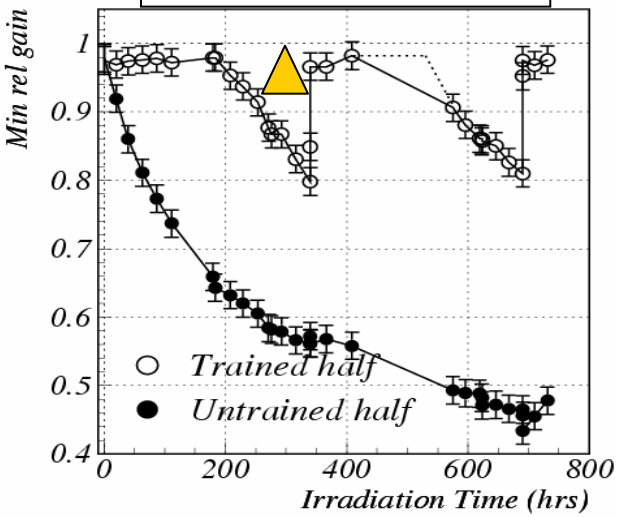
HD-module 20:

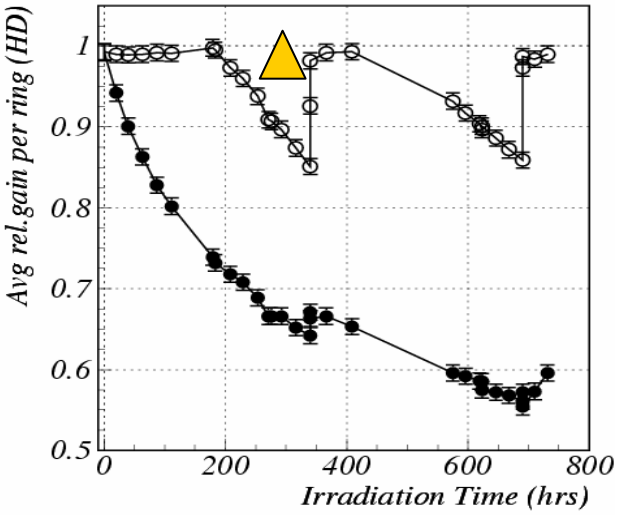




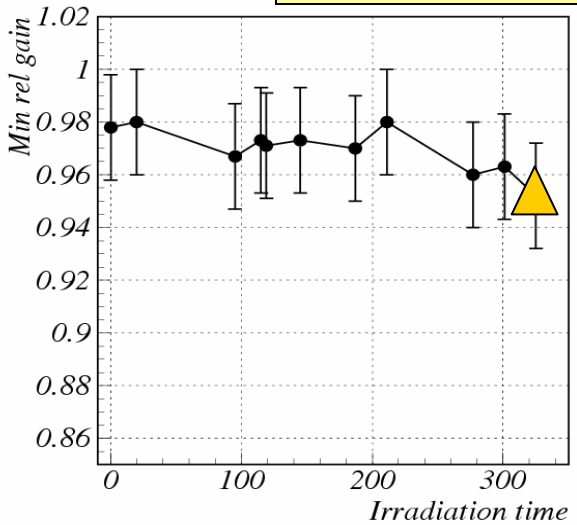
4) Heated module: HD-Mod 20

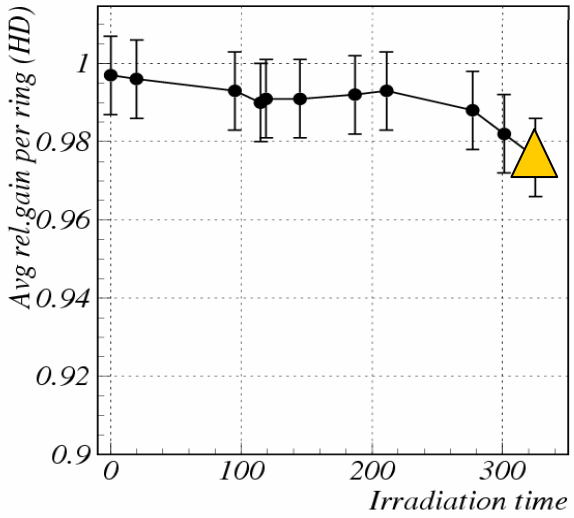
Compare to F-mod 3:

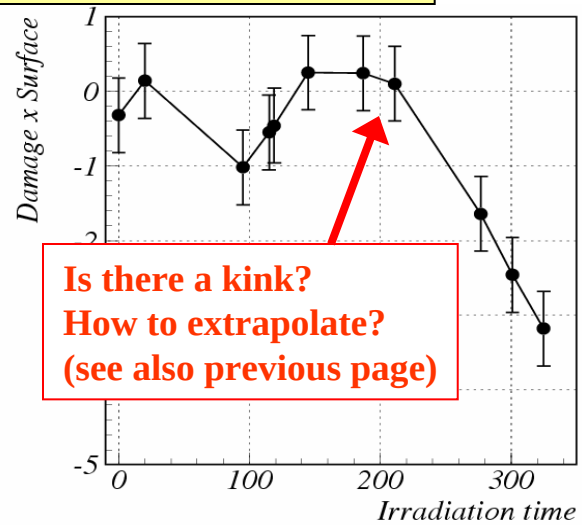




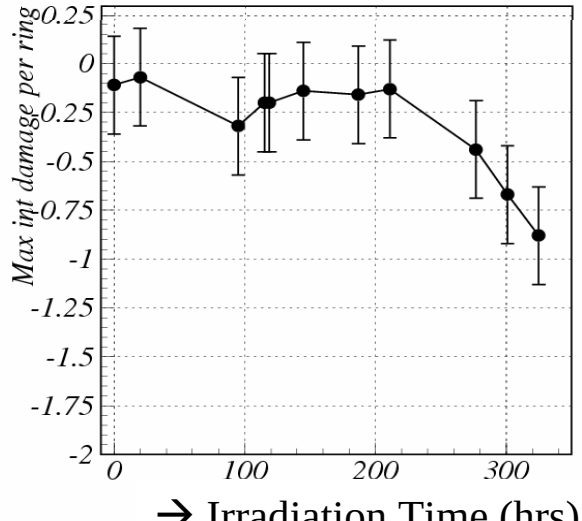
Compare damage for various definitions:







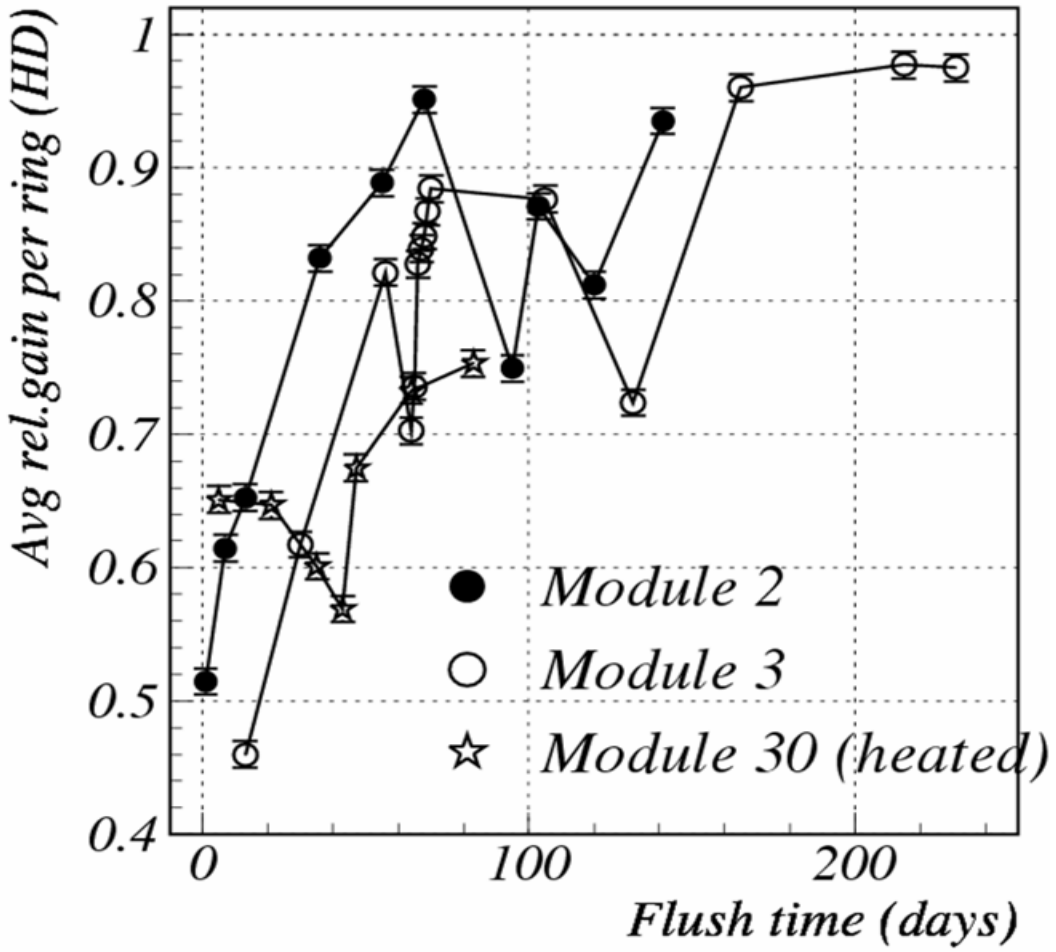
Is there a kink?
How to extrapolate?
(see also previous page)



→ Irradiation Time (hrs)

5) Flushing

- NI-module 3: 8 months integrated flushing

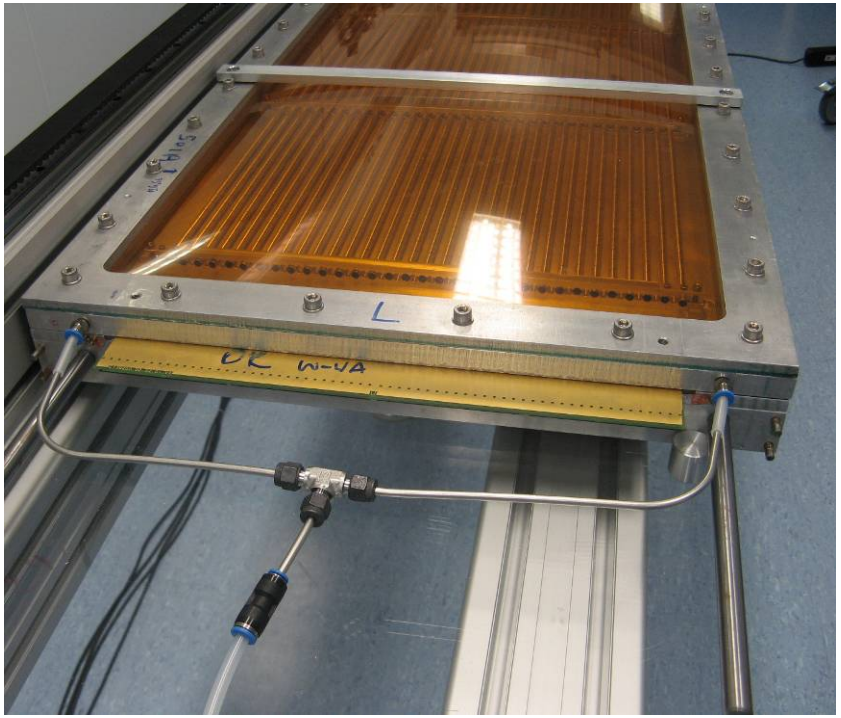


Find the Component:

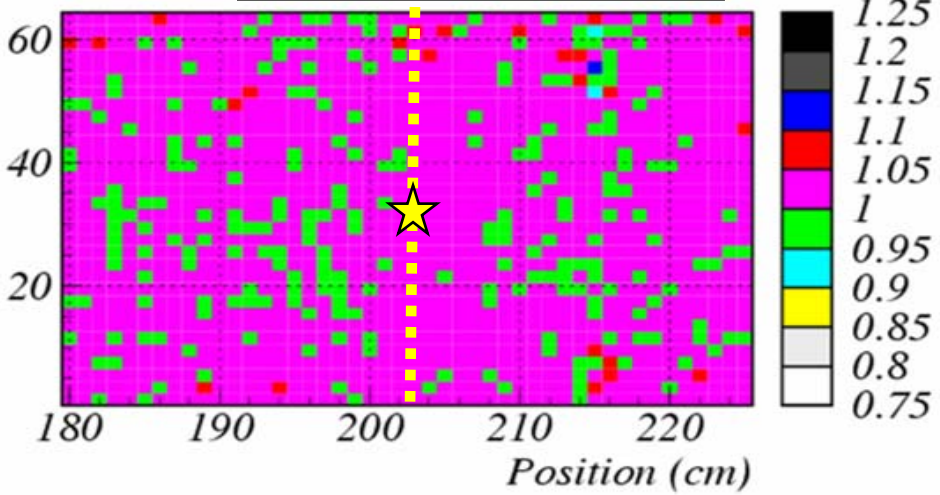
1) Irradiate only straws

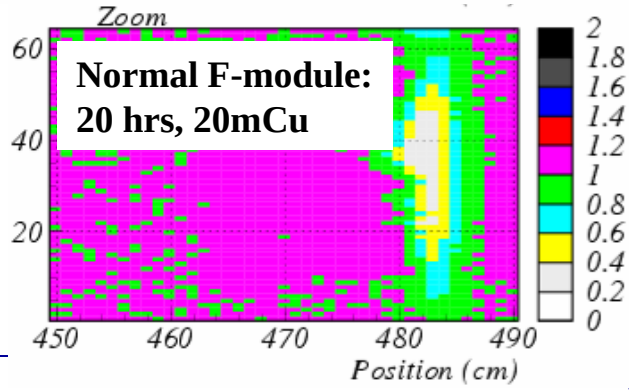
Philosophy:

- Create module without glue (Adam Nawrot).
- Add component by component, until it ages.



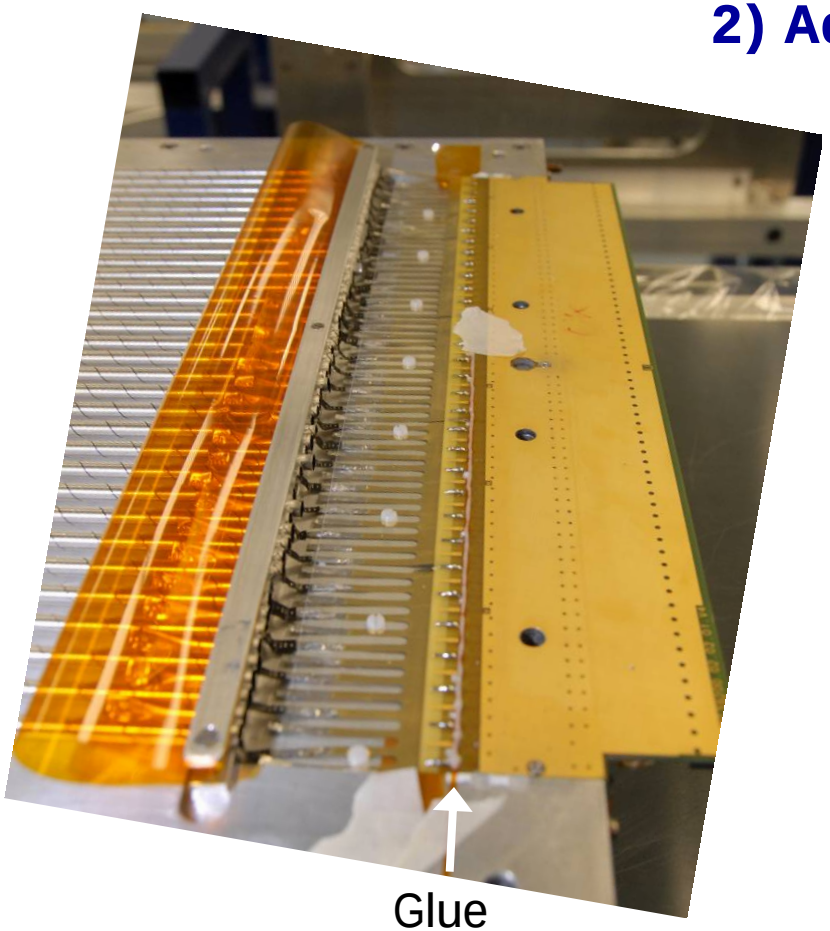
Test module (straws): 480 hrs, 20mCu



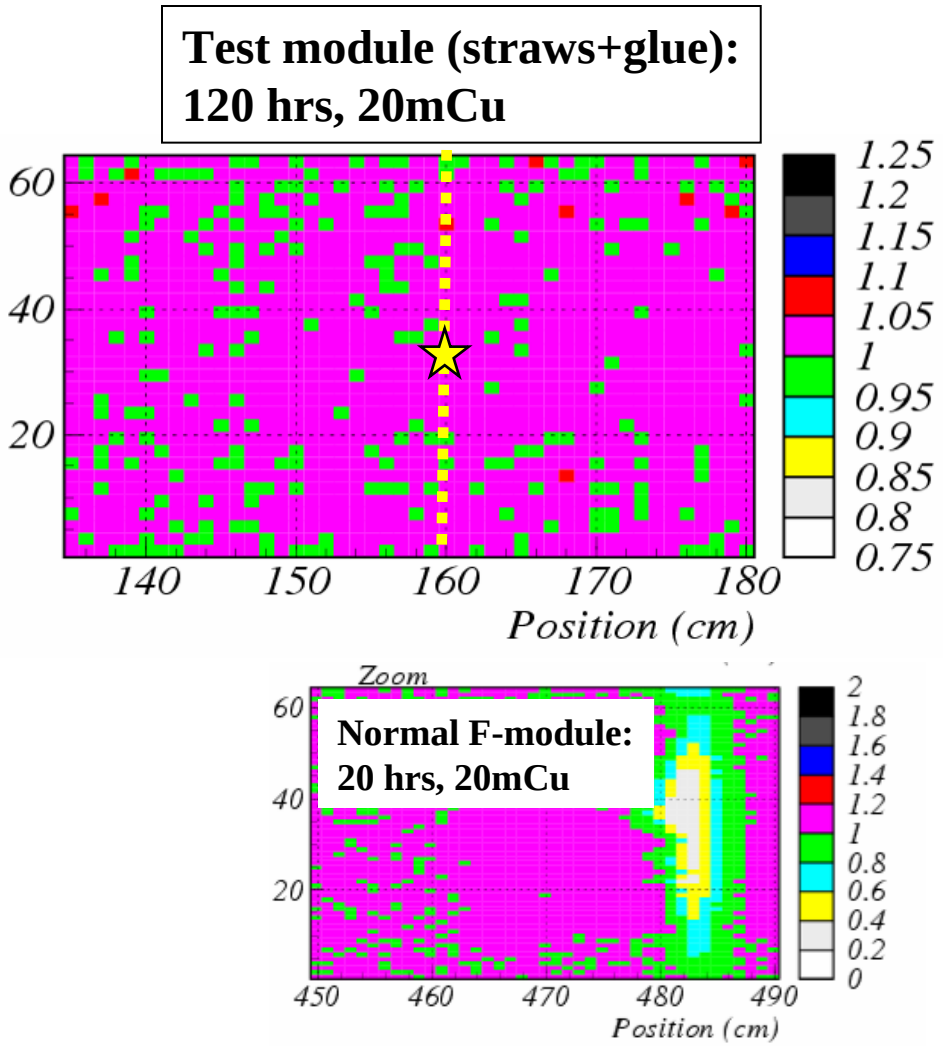


Find the Component:

2) Add bit of glue



Glue



Next steps:

1) Add panel
2) Add more glue