# Aging update Heidelberg

telephone conference , 25.01.07



16.12.07



#### News since the last LHCb week

what happened since the last LHCb week in Heidelberg?

- We want to check once more that the improvement of the modules is really an affect of heating and not only of flushing -> heat one more HD module
- If this test is positive -> heat NIKHEF module (No. 123 the really FIRST module, here we saw this effect in the first time)
- Analysis of glue with "Headspace GC -MC" (gas chromatography + mass spectometer)







on (44h): source1(ch21) 4% gain drop source2(ch41) 5% gain drop

 Irradiation (90h):
 ch21: -- 

 (340h):
 ch21: 6%

 (460h)
 ch21: 5.5%

 (460h)
 ch21: 4.5%

also in the third module heating seems to help -> heating established for HD modules

Setup/ History:

- day
- 1 5 flushing
- 6 11 reference Irradiation
- 13 25 Heating (42-45 °C)
- 26-33 flushing
- 34 42 Irradiation (two weak sources)
- 43 Heating

Module was send to Heidelberg in Nov. 2005 to confirm aging in the first time. After some weeks of testing the module was stored in our clean room with closed gas pipes

Heating: Same procedure as last time? Same procedure as every time!

--> same time of heating, same temperature, flushing with CO<sub>2</sub> during heating



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a bit more history... ... one year ago

#### at NIKHEF:

Irradiation with line source (Sr90):

- Pos: 16cm
- 100h irradiated (??)
- gain drop: 70%
- at Heidelberg:

Irradiation with strong 55Fe source

- Pos: 12cm
- 144h irradiated
- gain drop: 70%







	40/50h		110/115h		200h	
	ch21	ch41	ch 21	ch41	ch21	ch41
before heating	36%	49%	62% <mark>(1)</mark>	64%		
after heating <mark>(2)</mark>	2.5%	1.5%	8%	8%	16%	15%

(1) even more aging, but in these regions of gain drop our method of analysis is not longer sufficient
(2) 24 h of irradiation @ 1550V instead of 1600V

Large improvement compared to results before heating but also clear aging even after heating--> repeat heating, hopefully also an improvement



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#### Conclusion

 Heating the modules is established for Heidelberg modules Improvement of NIKHEF module is also large, also caused by heating, but still clear aging effect

# Outlook

- Repeat heating of the NIKHEF module ->already running
- Irradiate module once more
- Irradiation of 3<sup>rd</sup> HD module restarted-> irradiate up to 800h or more



