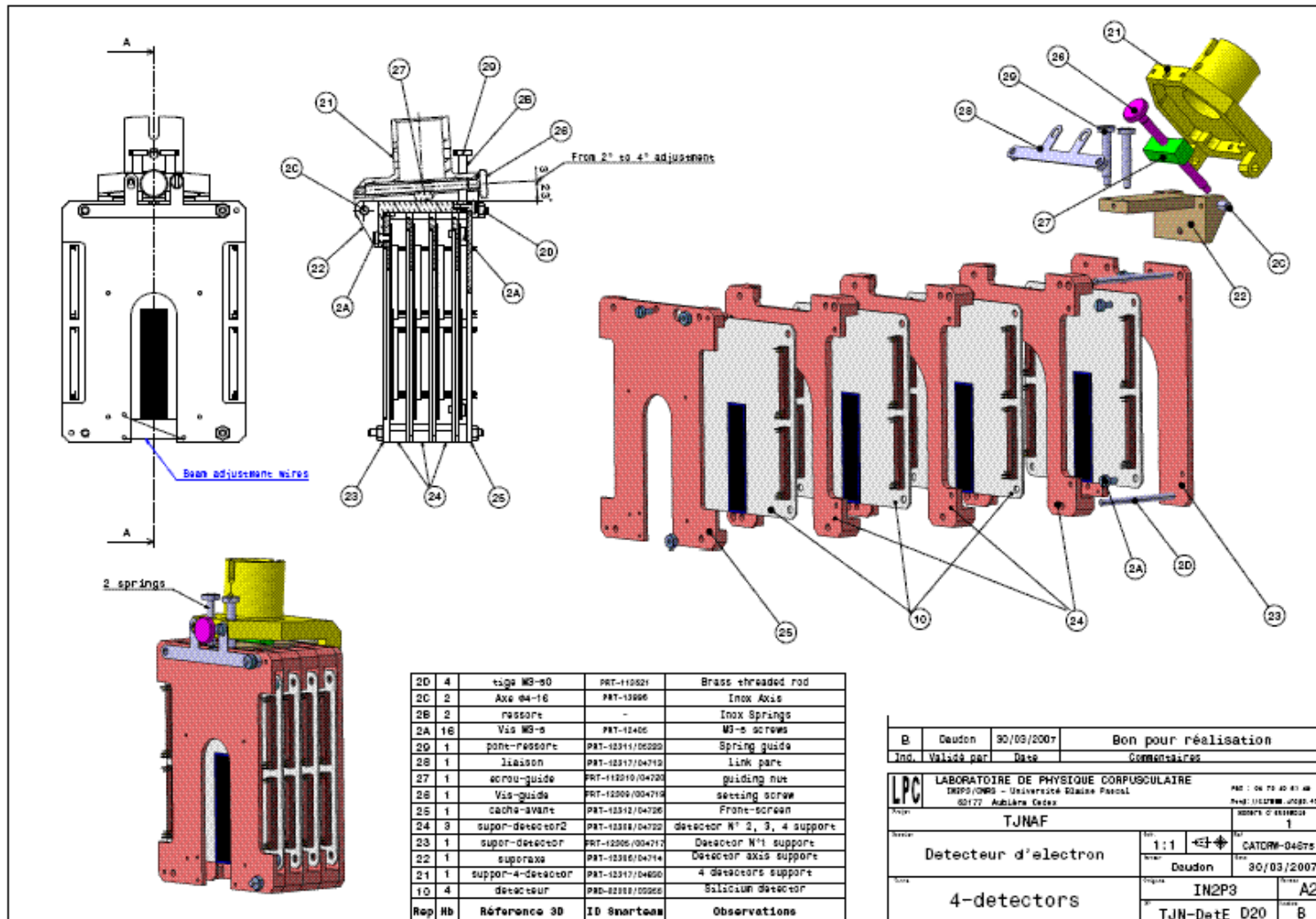


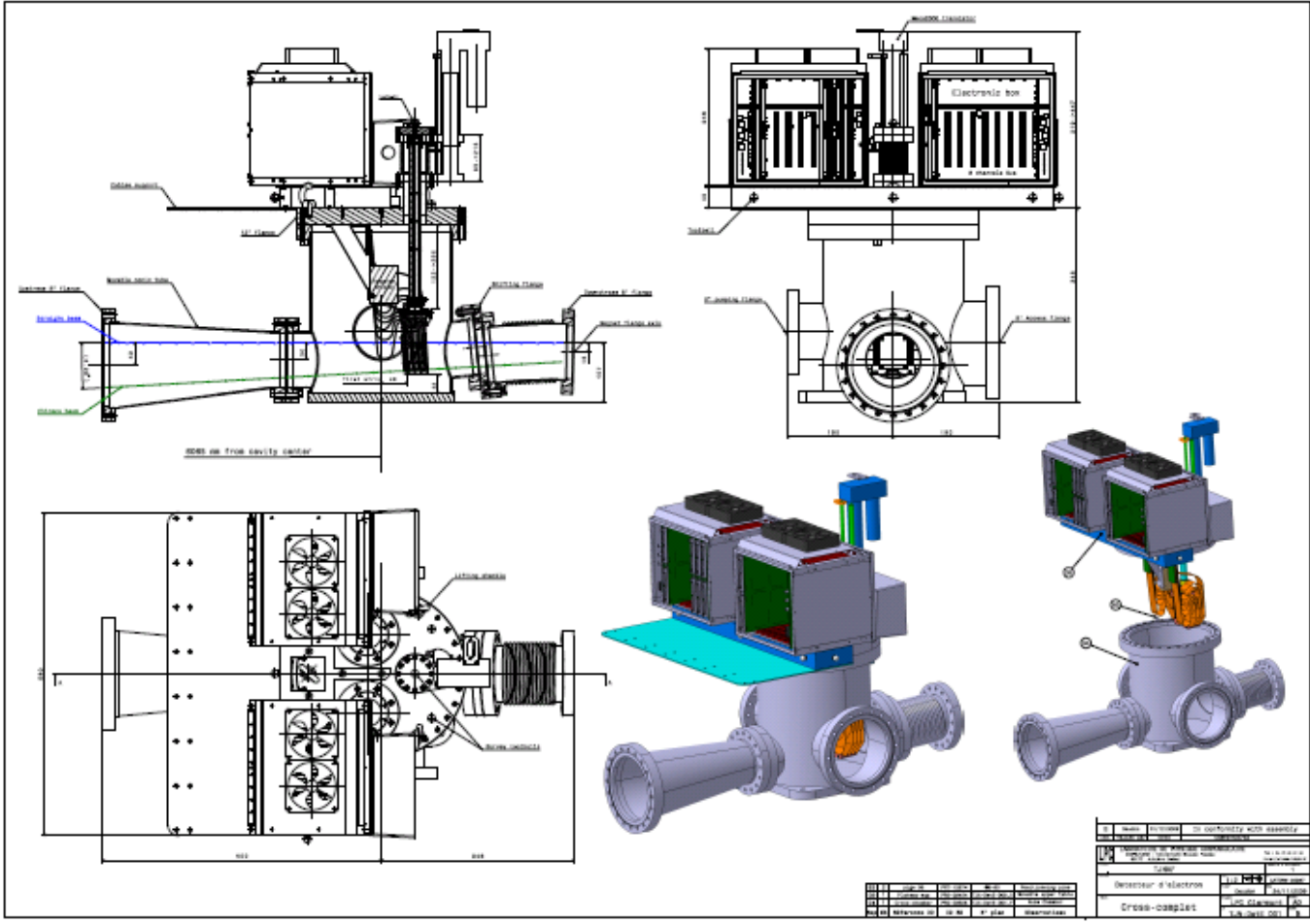
Hall A Compton Electron status and plan

Alexandre Camsonne

August 18th 2017

Electron detector schematic

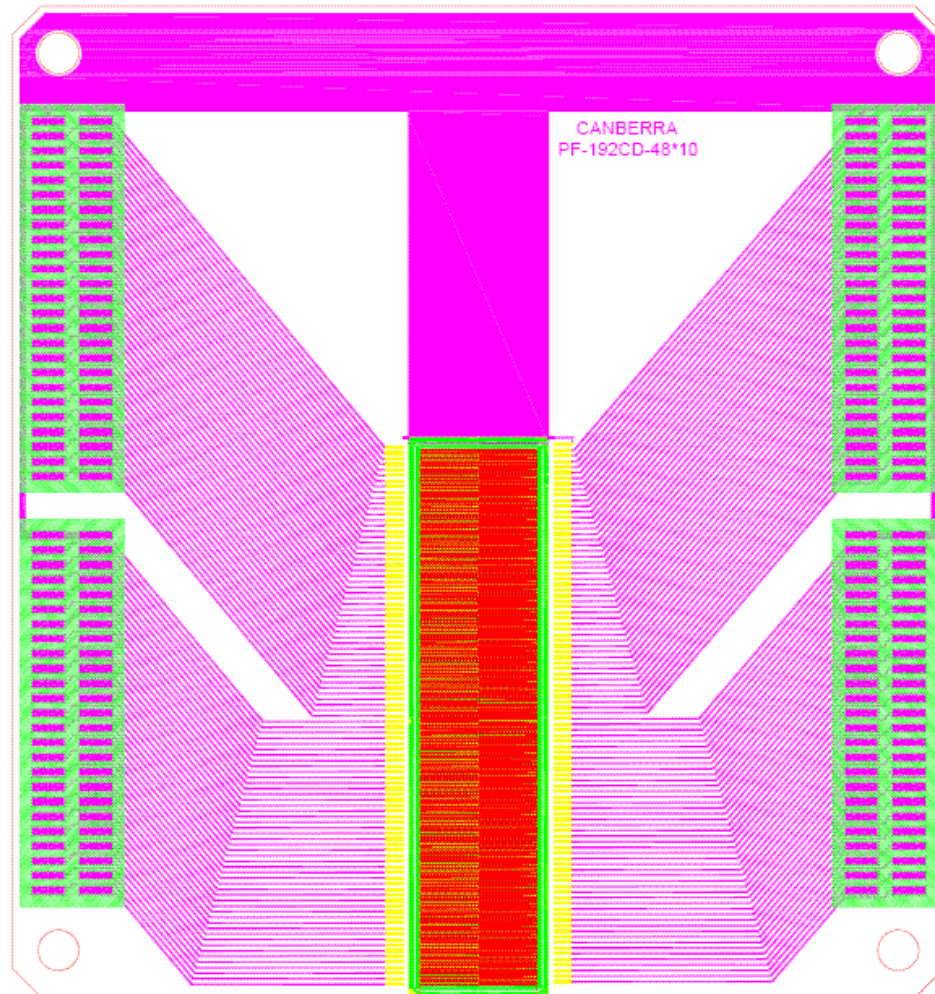


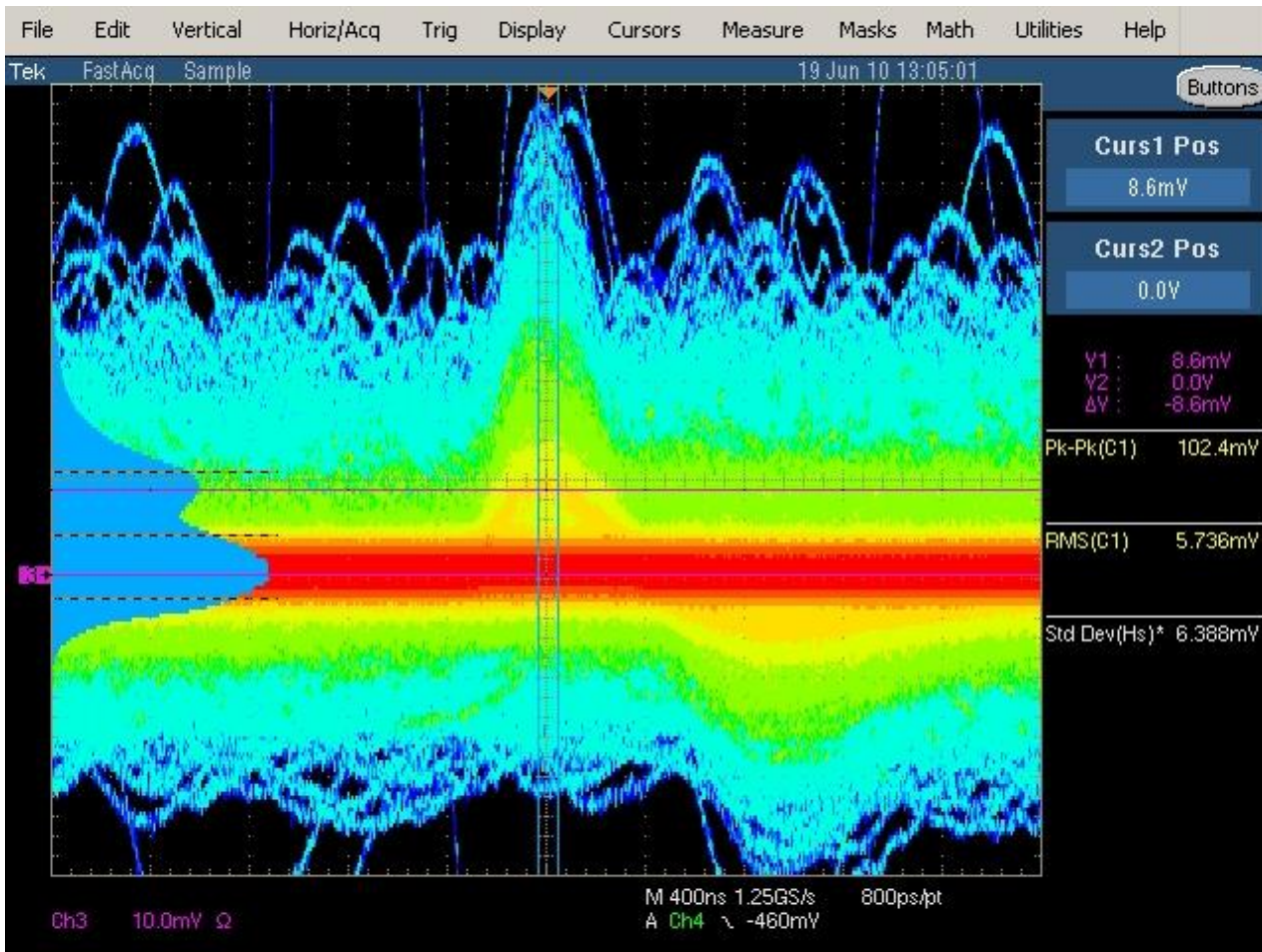


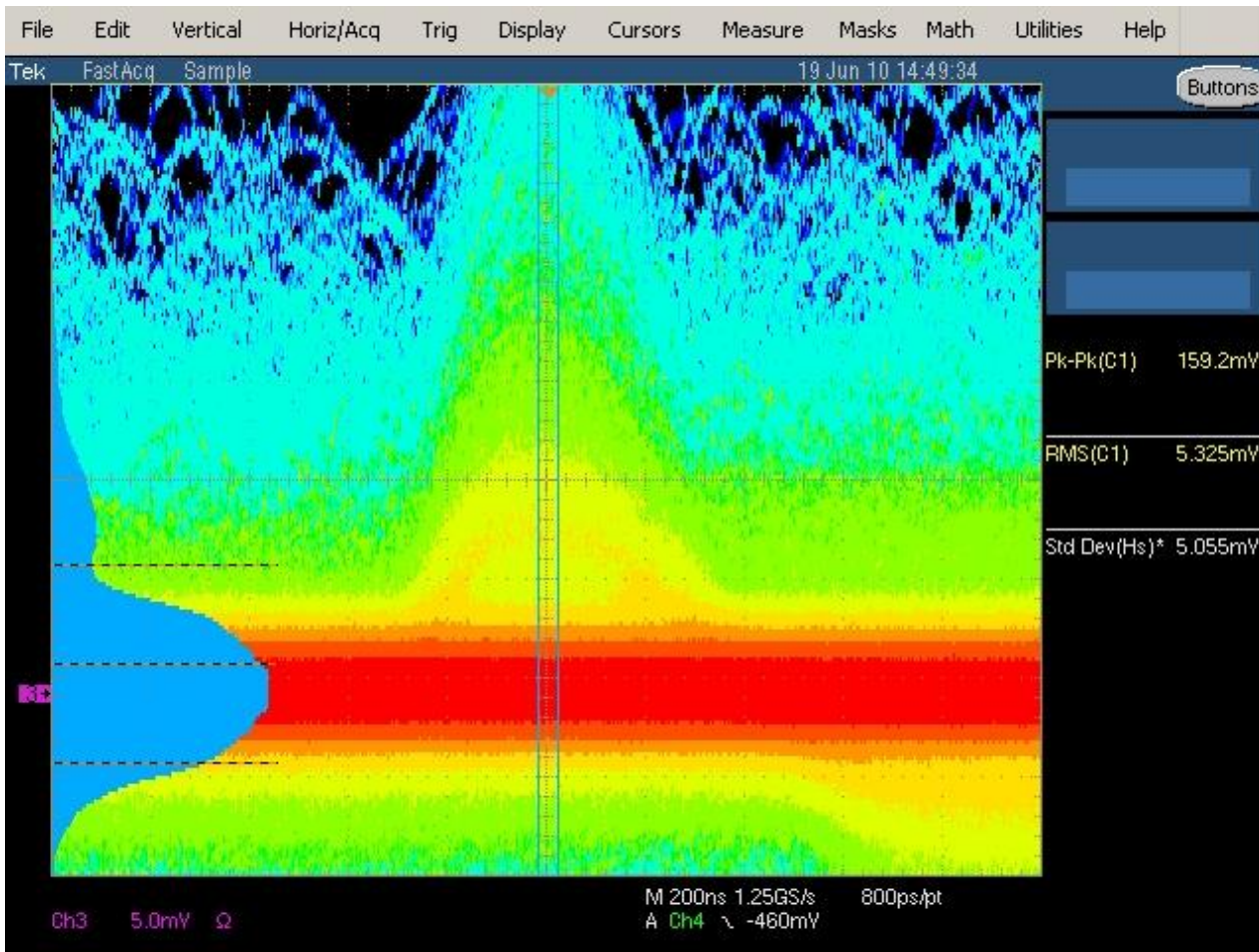
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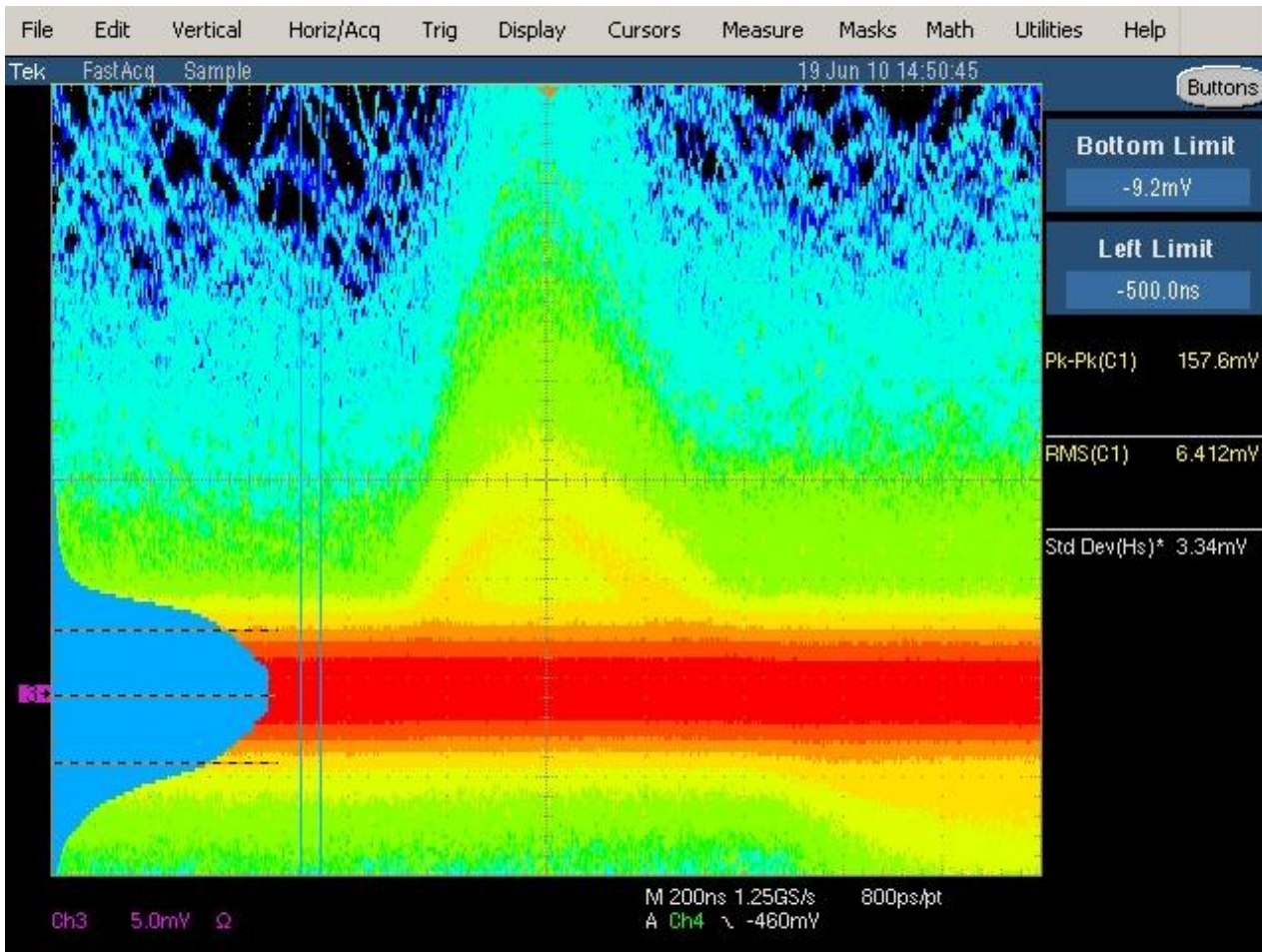
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Состав: Детектор и электроника				Код: 001-001	Стр.: 1
Описание: Детектор и электроника				Код: 001-001	Стр.: 1
Дата: 01.01.2023				Код: 001-001	Стр.: 1
Автор: И.И.И.				Код: 001-001	Стр.: 1
Проверен: И.И.И.				Код: 001-001	Стр.: 1
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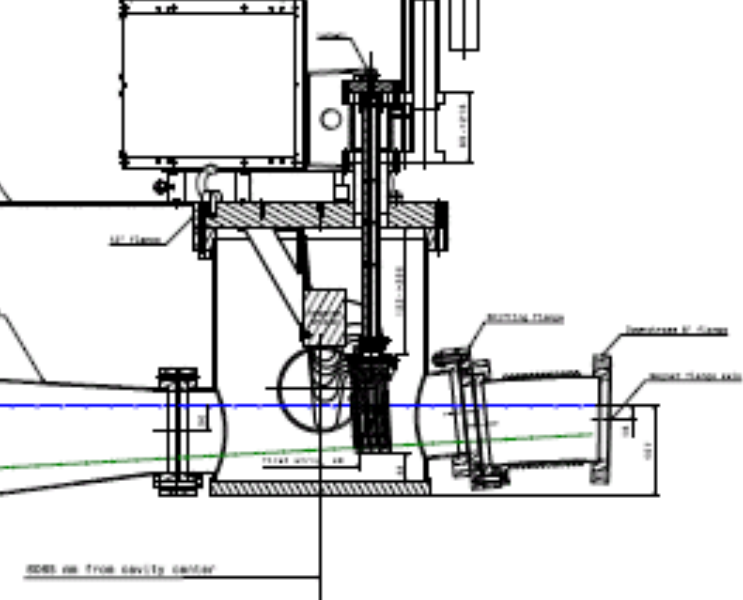
Electron detector schematic



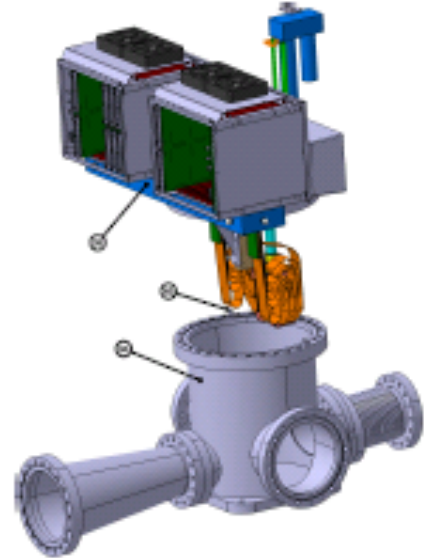
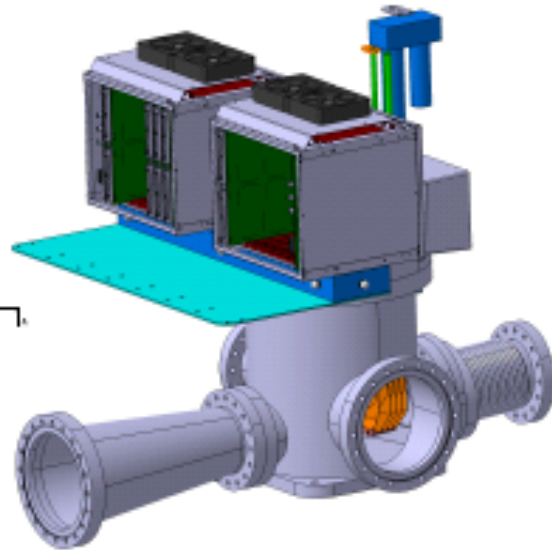
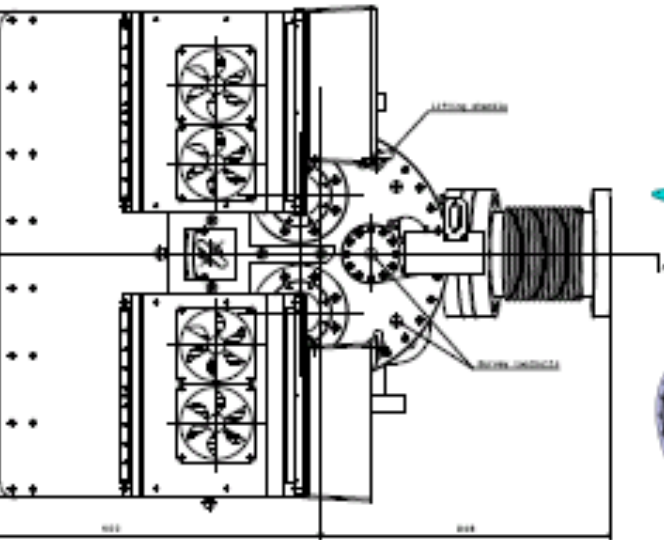
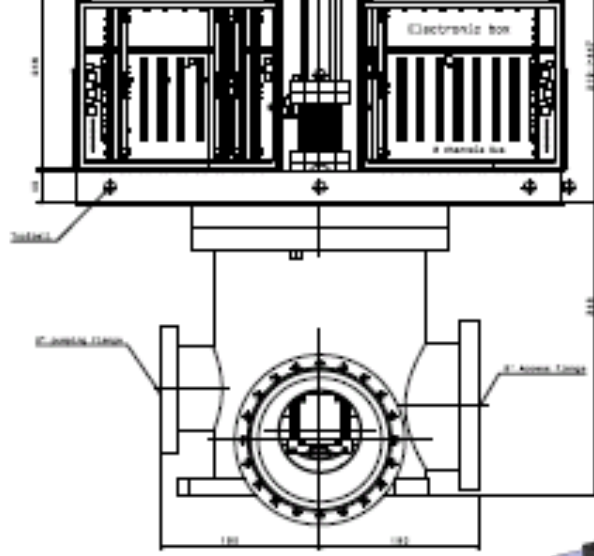








2005 mm from cavity center



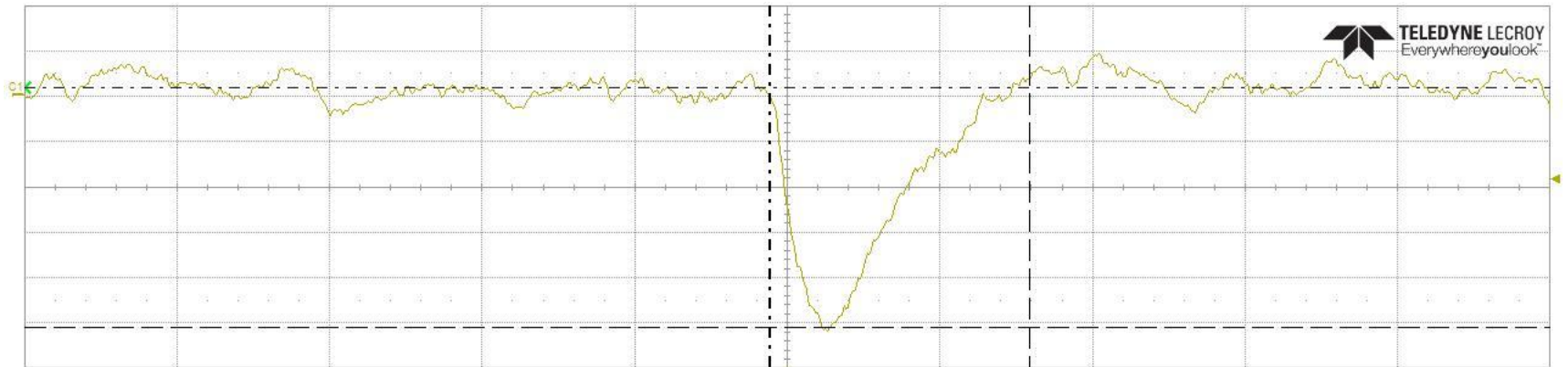
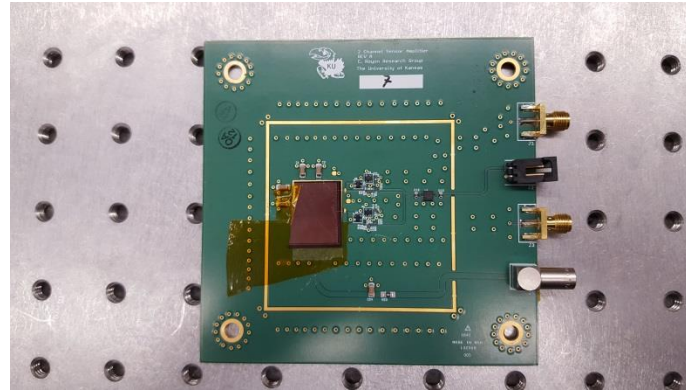
NO	DESCRIPTION	QUANTITY	UNIT	REVISIONS
01	Detector	1	PC	
02	Cross-connector	1	PC	
03	Electronic box	1	PC	
04	Armors	2	PC	

01		None	In accordance with assembly												
<table border="1"> <tr> <td colspan="2">LPC</td> <td>Project No.</td> <td>01/2015</td> </tr> <tr> <td colspan="2">LPC</td> <td>Project Name</td> <td>01/2015</td> </tr> <tr> <td colspan="2">LPC</td> <td>Project Date</td> <td>01/2015</td> </tr> </table>				LPC		Project No.	01/2015	LPC		Project Name	01/2015	LPC		Project Date	01/2015
LPC		Project No.	01/2015												
LPC		Project Name	01/2015												
LPC		Project Date	01/2015												
Detector d'electron		1/2	01/2015												
Cross-connector		1/2	01/2015												
		1/2	01/2015												

Possible solutions

- Preamp on detector
- Redo scattering chamber to reduce capacitance
- Thicker detector

Kansas University preamp



Measure	P1:ampl(C1)	P2:rise(C1)	P3:freq(C1)	P4:fall(C1)	P5:---	P6:---	P7:---	P8:---
value	61.04 mV	5.654 ns	---	1.804 ns				
mean	> 40.455 mV	9.731 ns	162.8 MHz	9.273 ns				
min	> 5.12 mV	253 ps	31.6267 MHz	174 ps				
max	> 80.81 mV	24.390 ns	1.1288840 GHz	25.148 ns				
sdev	> 8.778 mV	5.097 ns	162.6 MHz	6.824 ns				
num	2.272e+3	2.175e+3	195	1.913e+3				
status	⌘	⌘	⌘	⌘				

C1	DC50
	10.0 mV
	20.20 mV
----	1.8 mV
.....	-51.3 mV
Δy	-53.1 mV

Timebase	0.0 ns	Trigger	⌘
	5.00 ns/div	Stop	-18.7 mV
	1 kS	Edge	Neg
	20 GS/s		
X1=	-600 ps	ΔX=	8.55 ns
X2=	7.95 ns	1/ΔX=	117.0 MHz

Preamp option

- Discussed with Fernando , Chris and Nicola Minafra
- ASIC needs resources, need other project to develop and several years
- Discrete option possible but 96 channels only 192 channels per plan most likely wont fit

Electronics

- Older French electronics
- VETROC
 - 1 VXS crate
 - 6 VETROC for 768 channels
- Borrowing 2nd HCAL VTP for triggering
- Hall D chamber ASIC : 8 channel amplifier discriminator

Additional electronics

- Trigger readout
 - VTP 7K\$
 - Adapter from 50 pins to 26 pins to plug detector (1K \$ + design)
- Front end
 - Might switch to Hall D A/D if better signal to noise ratio / crosstalk

Plan

- Move detector back as is after tritium
- Might upgrade to thick plane if funding available
- Run with VETROC readout
- Longer term : redo scattering chamber to be similar to Hall D design and have cooling and low voltage to test detector preamp option, HVMAPS option being looked by UManitoba