

Summary of Inner Tracker Silicon Meeting

in Zürich, March 8, 2000

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1 Presentation of Vadim's simulation

Vadim's note on his calculations (all plots) is available in his public directory:

`~/vtalanov/public/2000-013.ps`

. See also files

`2000-013_plots_[flux,dose].ps`

which contain the 2D plots.

- flux of charged hadrons
- flux of all charged particles: difference between fluxes shows the effect of secondaries mostly from beam pipe (up to a factor of 10 in layer)
- energy spectra of electrons
- absorbed dose (1.6 MRad per year), station 3 suffers most: will all stations (especially station 3) survive 10 years of operation ?
- composition of charged hadron flux:
 - 75% pions
 - 10% protons
 - 15% neutrons
- energy spectra of pions/protons/neutrons
- equivalent fluence of 1-MeV-neutrons: Vadim derived a factor C to approximate this from the charged hadron flux
$$\text{equivalent fluence of 1-MeV-neutrons} = C * \text{charged hadron flux}$$
($C = 2/3 \Leftrightarrow 1/2$ corresponding the composition of charged hadron flux + 30% for the neutrons)
- Open questions:
 - Is there any parameterization for the 2D flux distributions ?
 - Can the threshold for the neutron energy be lowered to study the effects of thermal neutrons? Vadim argues that this makes no sense until we have a better impression of the material distribution of our detector and infrastructure.

*Summary by P. Sievers

2 Completing Olaf's infrastructure list

See attachment infra-000308.txt

3 Distributing tasks to the institutes

(having the infrastructure list in mind): See attachment tasks-000308.txt

4 Discussion about time scale and milestone by end of 2000

See attachment milest-000308.txt

5 Next meeting

Lausanne, April 5, at 14h00

infra-000308.txt

Available infrastructure and technical staff

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- x = is available
- (x) = planned or easy to purchase
- (?) = to be checked
- (@...) = available at 'partner' institute

	HD	Lau	San	Zue
reasonable clean area	x		x	x
cold, dry nitrogen	(x)	(x)	(x)	(x)
large freezers	(x)	(x)	(x)	(x)
small wire bond machine	x	-	x	(x)
large wire bond machine	(@DESY)	-	-	(@ETH?)
gluing station		(?)		(@ETH?)
microprobe station	x		x	
LRC/analysis station				
3D measuring station	x			(@ETH?)
microscopes	x	x	x	x
thermal camera		(EPFL?)		
1064nm laser	x			
ruthenium source	x	x	x	x
X-ray setup			x	
cosmic-ray setup		(x)	x	(x)
front-end electronics	x	(x)	x	(x)
4-channel oscilloscope	x	x	x	x
r/o system (FADC, 40MHz)	(10MHz)		(10MHz)	(10MHz)

Technical staff:

Heidelberg:

one FTE technician electronics

one FTE technician mechanics

Lausanne:

one designer (shared with gas group)

one engineer (shared with gas group)

Santiago:

one technician, 100% after June

Zuerich:

one engineer, 50% from spring 2001

one technician, 50% from spring 2001

tasks-000308.txt

Task list for silicon R&D phase:

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task	who?
detector geometry/layout	
- signal/noise	Phillip
- occupancies	Malica
- tracking performance	Frederic Ronga / Olaf
detector performance	
- lab measurements	Santiago (Alfredo) / Zuerich (Phillip)
- test beam	all
radiation damage	
- simulation	Tam (Vadim supports)
- irradiation tests	all (test beam)
infrastructure	
- cooling	Lausanne (Tam)
- mechanical support	Lausanne (Tam)
readout	
- front-end	Heidelberg (Michael)
- off-detector	Lausanne (Raymond)
detectors	
- cost estimates	Michael
- producers	Michael
follow developments	
- ATLAS	Phillip
- CMS	Olaf
- HERA-B	Michael
- RD48	Alfredo

milest-000308.txt

Needed for proof of principle, by end 2000:

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- o detector technology
- o detector geometry and tracking performance
 - measured S/N
 - simulated occupancy, momentum resolution
- o station layout
 - number of readout channels
 - material budget, including frames, cooling, electronics, cables...
- o cooling
 - measured temperature profile with mock-up detector
- o test beam ?
 - (try to follow gas detectors)
- o cost estimate