

Segmentation results

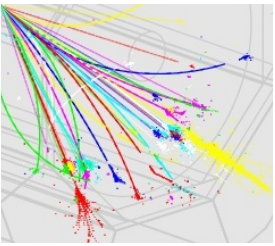
SiD PFA Meeting

21.05.2008

M. Stanitzki



Putting it together

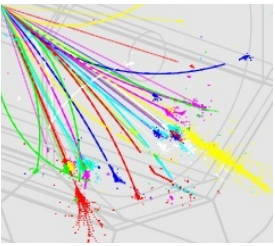


	SiDish	SID	LDC00Sc	Comments
Starting point (200 GeV qq)	35%	46%	30%	from Pandora/ Memory
- RPC (3%)		43%		from Pandora
+6 more layers in HCAL (2 %)		41%		guesstimated
+TPC Tracking tricks (2 %)		39%		guesstimated
+10 layers in ECAL (2 %)	33%	37%		from Pandora
+0.25 m radius (1 %)	32%	36%		from Pandora
+0.2 m radius – 1T B field (2 %)	30%	34%	30%	from Pandora

Just an exercise with plenty of caveats !

Shown in SiD Advisory Meeting (last Monday)



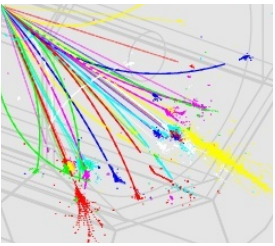


The segmentation stuff

- Seems to work fine with latest and greatest
 - Mokka
 - Marlin
 - Pandora
- Of course the usual nuisances
- Due to a new Mokka, there is no **direct** comparison with all the other values possible.



three variants

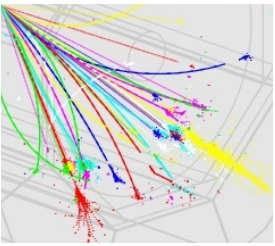


- Keep
 - total HCAL thickness
 - Active material (Scintillator)
 - Absorber material
- change segmentation (30,40,50 layers)

Layers	total thickness	Iron thickness	Absorber thickness	HCAL thickness	λ
30	32.7	26.2	6.5	980	4.92
40	24.5	18.0	6.5	980	4.61
50	19.6	13.1	6.5	980	4.45

- the 40 layer version is the “standard” SiDish !
- λ done with $\lambda_{\text{Iron}}=168$ mm and $\lambda_{\text{Scint}}=795$ mm
- note: there is some more material between HCAL and ECAL

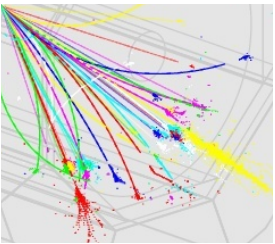




Some first results

Detector Tag	Layers	uds (91 GeV)		uds (200 GeV)	
		α %	Error	α %	Error
SIDish_v2_hcal30	30	30.5	0.4		
SIDish_v2_hcal40	40	28.5	0.5		
SIDish_v2_hcal50	50	28.6	0.4		

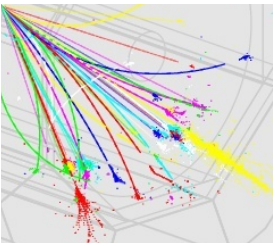




Playing with the ECAL

- Point raised by Harry, is the ECAL optimal ?
 - we see a benefit going from 20+10 to 30+10 layers
 - better segmentation helps ?
 - or just pure thickness ?
 - Effect is $\sim 2\%$
- Made a SiDish_ecal_q37
 - SiDish with 37 layers but same overall thickness
 - samples submitted (done by end of the week)



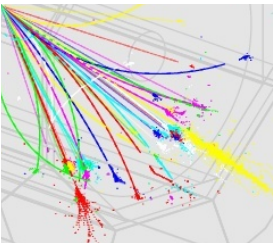


Z dependence

- Due to popular request by a single gentleman
- Norman kindly generated u jets going at $\cos(\theta)=0.92$ for three energies: 50, 100, 250
- Submitted first sets
- will compare first
 - LDC00Sc
 - SiDish



Comments



- It takes me about three days for one set to push it through
- That is a little bottleneck right now
- Ways out:
 - Borrow me a farm
 - Write email to Norman (McCubbin) so I get more queue time
 - speed up Mokka

