

L3 Tracking, Vertex Examine & Detector Geometry

L3 Algorithms Meeting

November 6, 2002

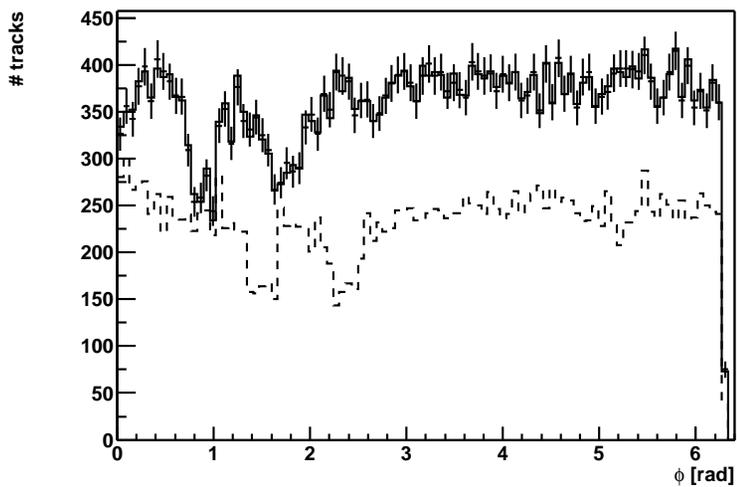
Michiel Sanders

University of Manchester

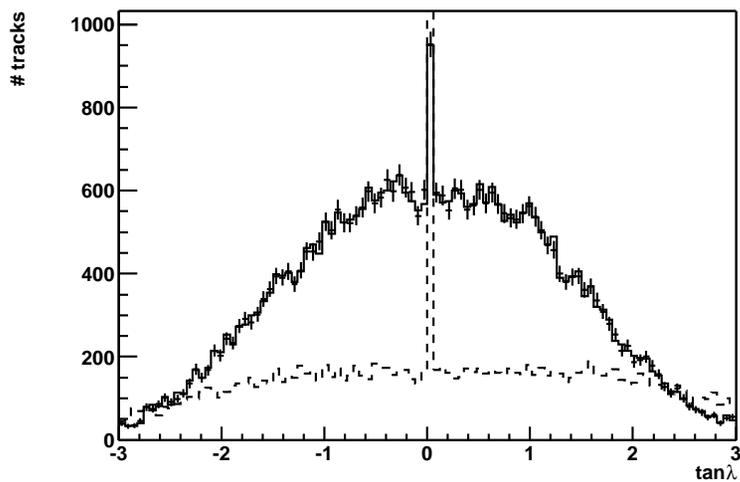
Detector Geometry

- New geometry v9 available in p13.02: improvements in CFT internal alignment
 - How is L3 tracking affected by this?
- ⇒ Run vertex examine (p12.03) with
- * Old geometry: v8, p12
 - * New geometry: v9, p13
 - * Default geometry from RCP files
- ⇒ No major differences in track distributions between v8 and v9, default geometry is bad
- Where do ScriptRunner / unpackers get geometry / runnumber from?

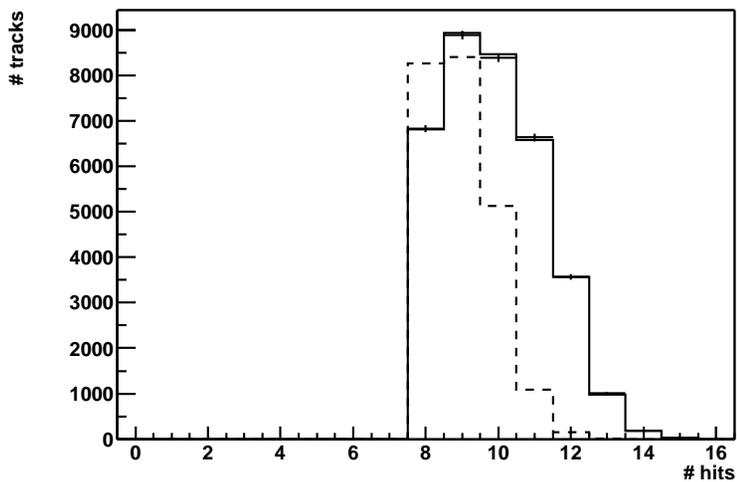
Track phi (L3Track)



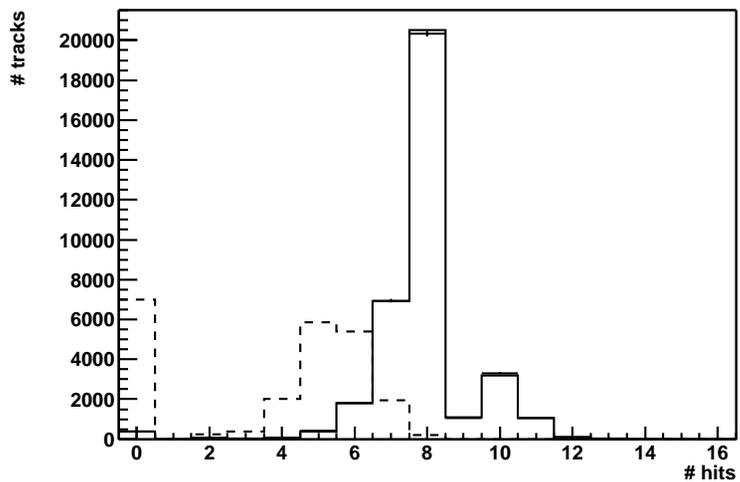
Track tan(lambda) (L3Track)



Number of xy hits (L3Track)



Number of z hits (L3Track)



(Test) Run 167019

Beam Position

- Average position from number of fits, each fit at least 1000 tracks
- Based on one file in run 160196 (23 measurements)

Geometry v8

$\text{mean}_x = 689 \mu\text{m}$	$\text{RMS}_x = 12 \mu\text{m}$
$\text{mean}_y = 916 \mu\text{m}$	$\text{RMS}_y = 23 \mu\text{m}$
$\text{mean}_{xz} = -74 \mu\text{rad}$	$\text{RMS}_{xz} = 108 \mu\text{rad}$
$\text{mean}_{yz} = -135 \mu\text{rad}$	$\text{RMS}_{yz} = 90 \mu\text{rad}$

Geometry v9

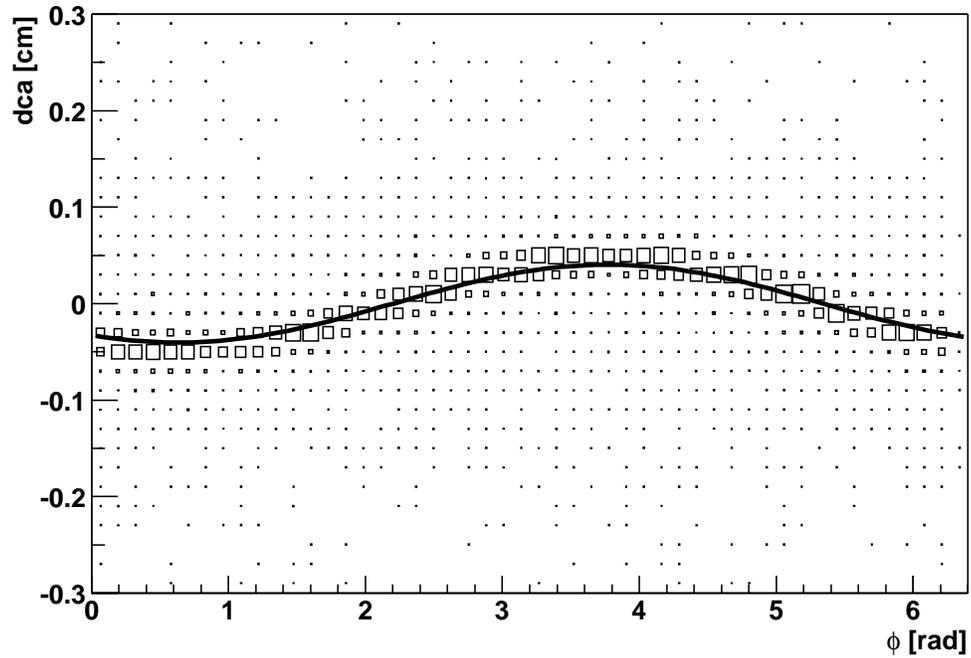
$\text{mean}_x = 630 \mu\text{m}$	$\text{RMS}_x = 14 \mu\text{m}$
$\text{mean}_y = 899 \mu\text{m}$	$\text{RMS}_y = 22 \mu\text{m}$
$\text{mean}_{xz} = 146 \mu\text{rad}$	$\text{RMS}_{xz} = 82 \mu\text{rad}$
$\text{mean}_{yz} = -240 \mu\text{rad}$	$\text{RMS}_{yz} = 85 \mu\text{rad}$

⇒ Things do change!

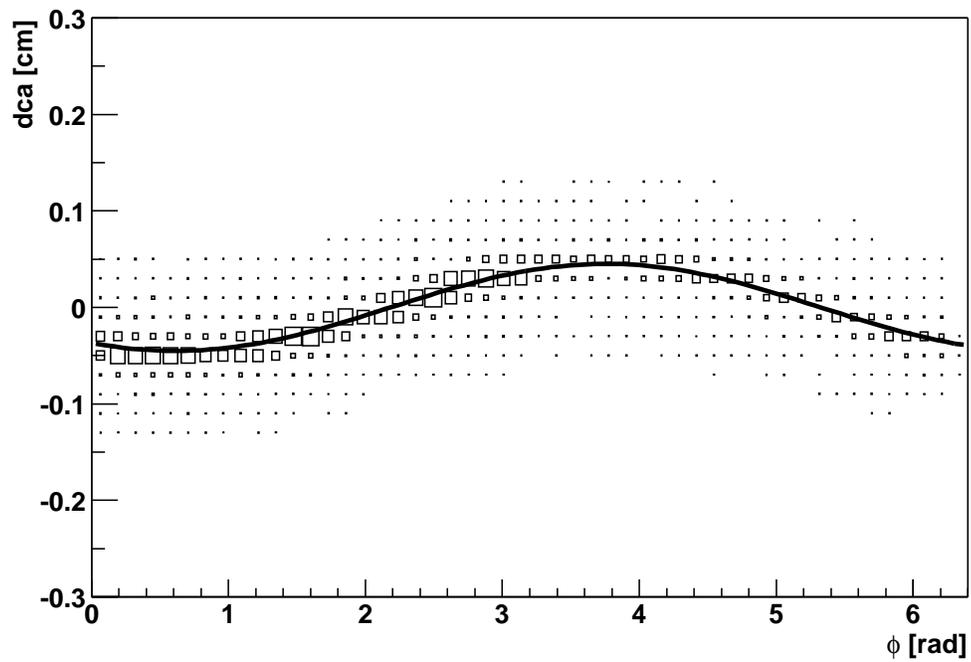
⇒ Still no agreement with average vertex position

(Test) Run 167019, v8 Geometry

Track DCA vs phi before fit 0

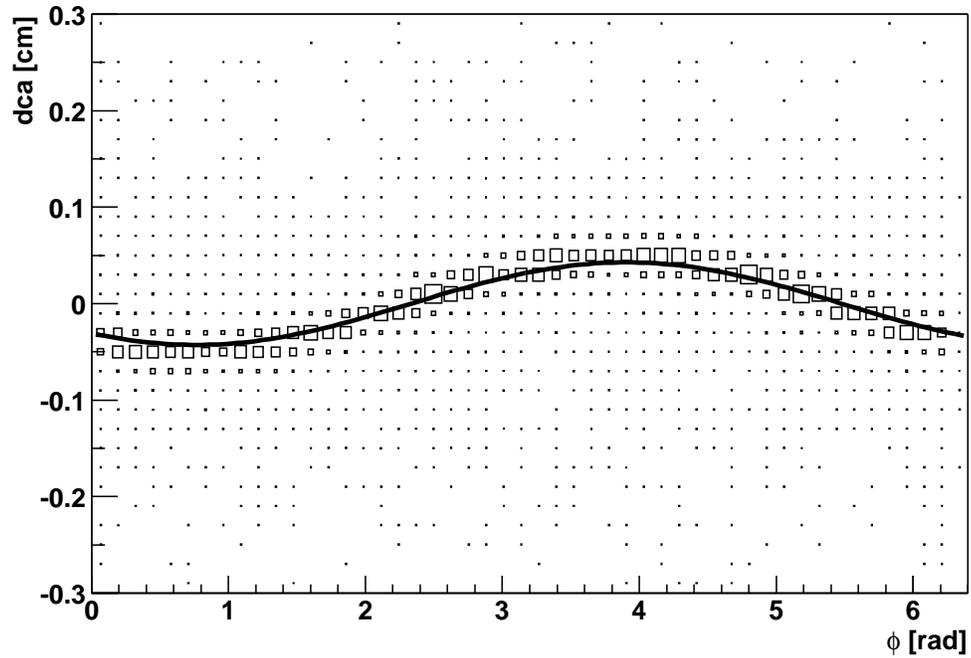


Track DCA vs phi after fit 0

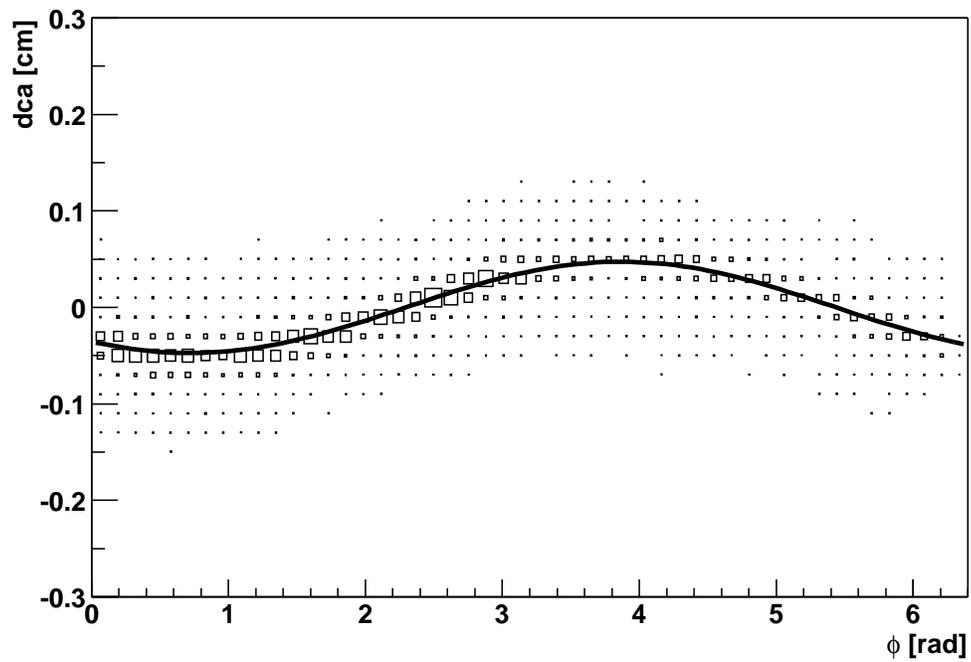


(Test) Run 167019, v9 Geometry

Track DCA vs phi before fit 0



Track DCA vs phi after fit 0



Conclusion

- No large differences between old and new geometry
- Need to understand how beam position fit loses tracks