

SMD strips were missing at sector boundaries because they extruded the volume which created them. Increasing the size of the volume which created them appears to have done the trick.

**Block EXSG** Is another logical volume... this one actually creates the planes

C--

C-- Creates:

C-- + EHMS -- shower max strips

C-- + EFLS -- front cover for SMD planes

C-- + EBLS -- back cover for SMD planes

C--

Attribute EXSG seen=1 colo=7 serial=cut lsty=3

Material Air

Shape TUBS dz=emcs\_gapsmd/3/2,  
rmin=section\*tan\_low-1.526,  
rmax=(section-secwid/2)\*tan\_upp+dup,  
phi1=emcs\_phimin/emcs\_nsupsec,  
phi2=emcs\_phimax/emcs\_nsupsec

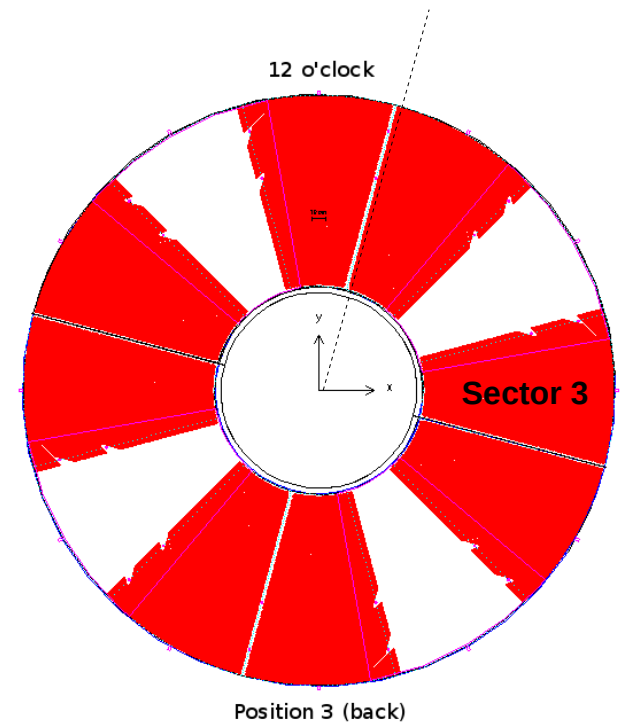
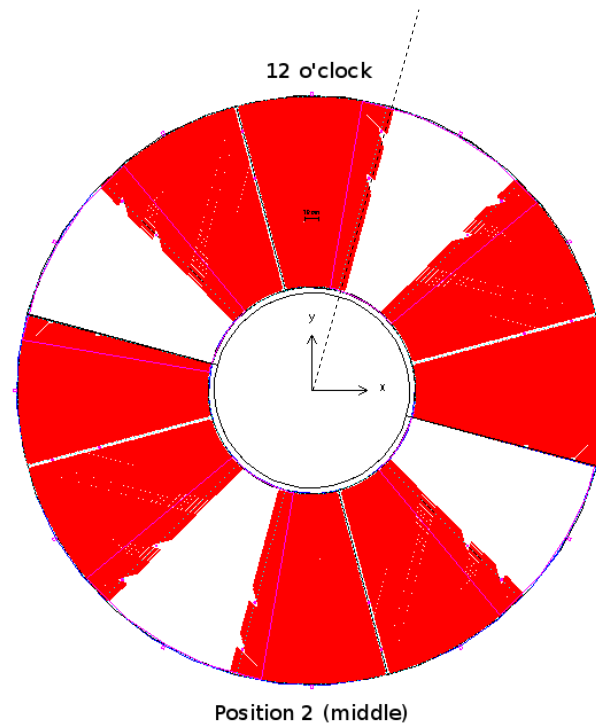
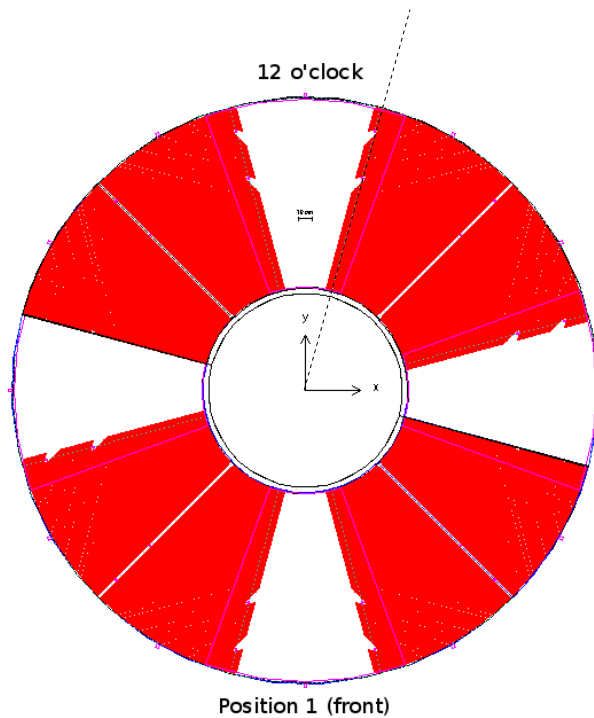
....

**EndBLOCK**

Constrains daughter volumes within sector boundaries

Solution: increase size of volume to +/- 20 degrees, and set EXSG as a MANY volume

# Expected Pattern



At  $75^\circ$  expect:

- position 1 filled
- position 2 filled
- position 3 empty

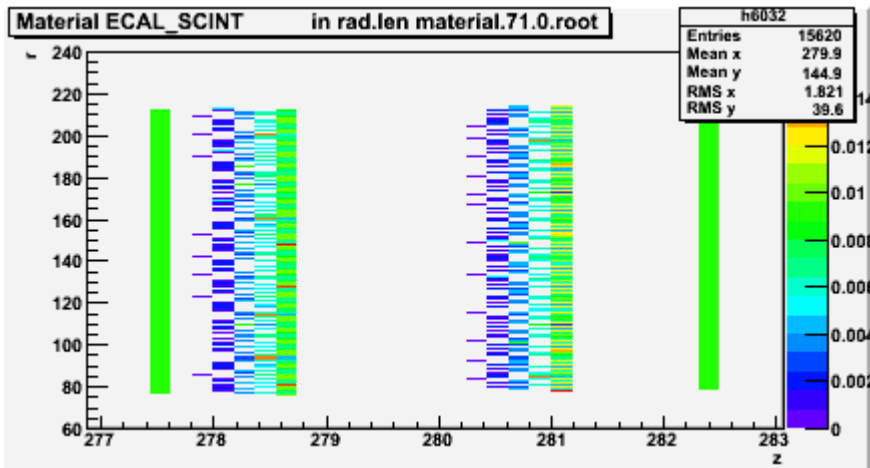
At  $< 75^\circ$  expect:

- position 1 filled
- position 2 empty or partial
- position 3 filled

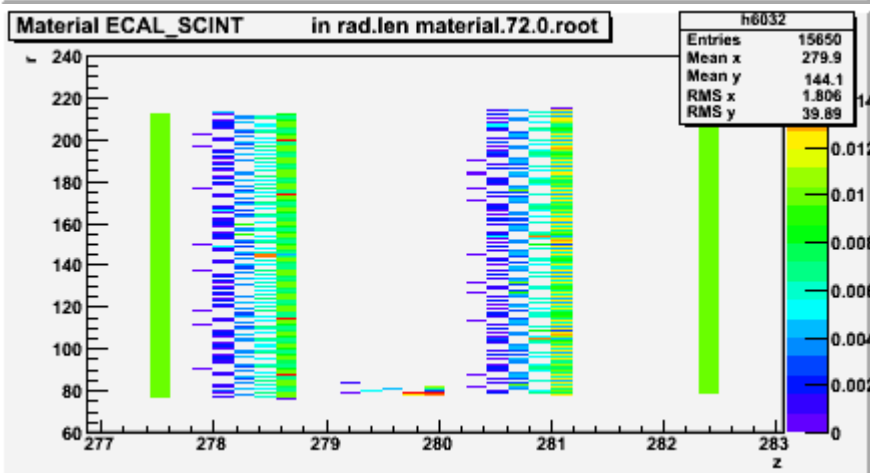
At  $> 75^\circ$  expect:

- position 1 empty
- position 2 filled
- position 3 empty or partial

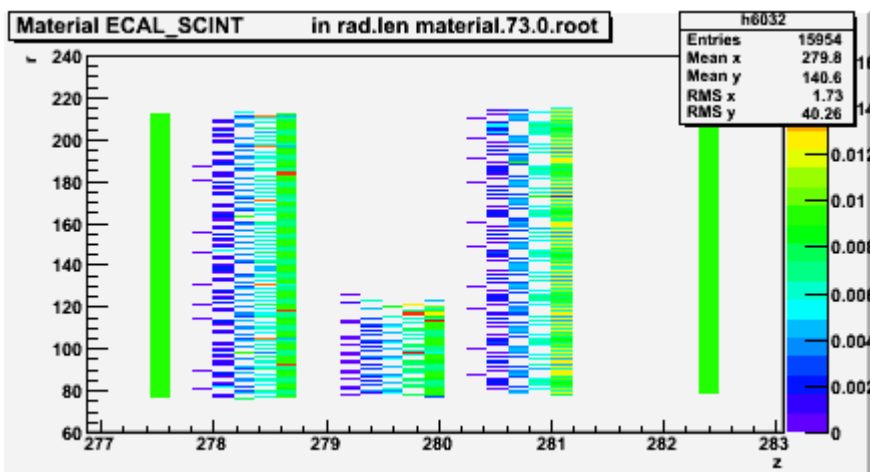
$\phi = 71^\circ$



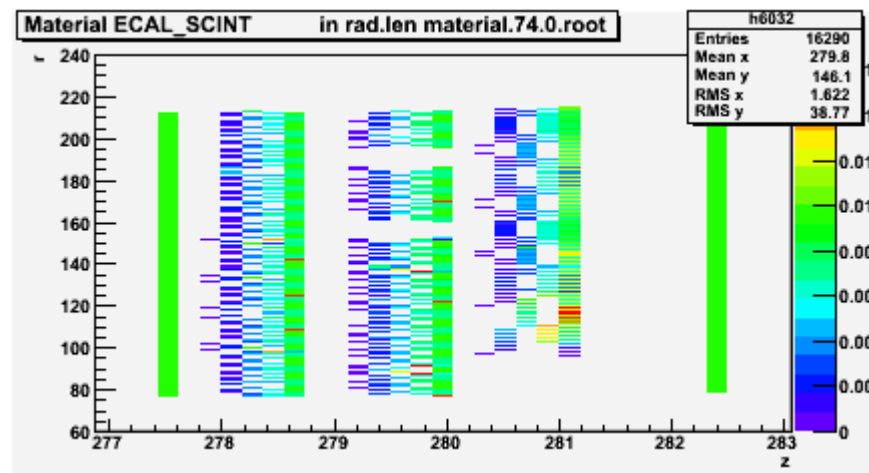
$\phi = 72^\circ$



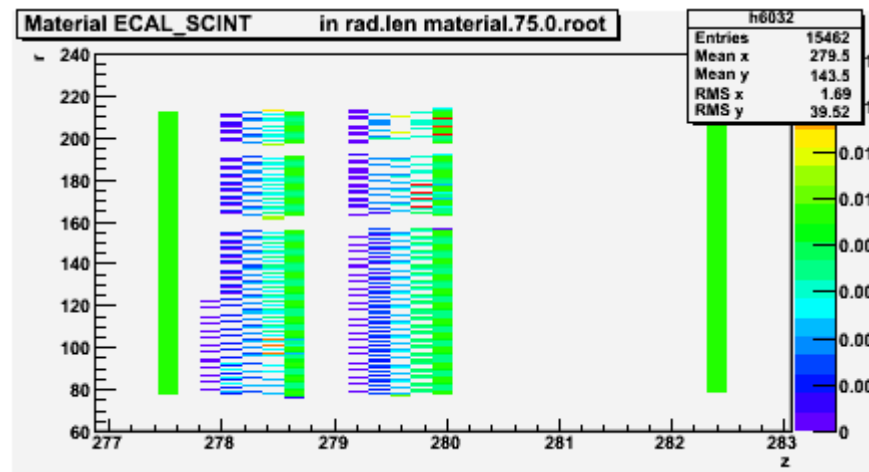
$\phi = 73^\circ$



$\phi = 74^\circ$



$\phi = 75^\circ$



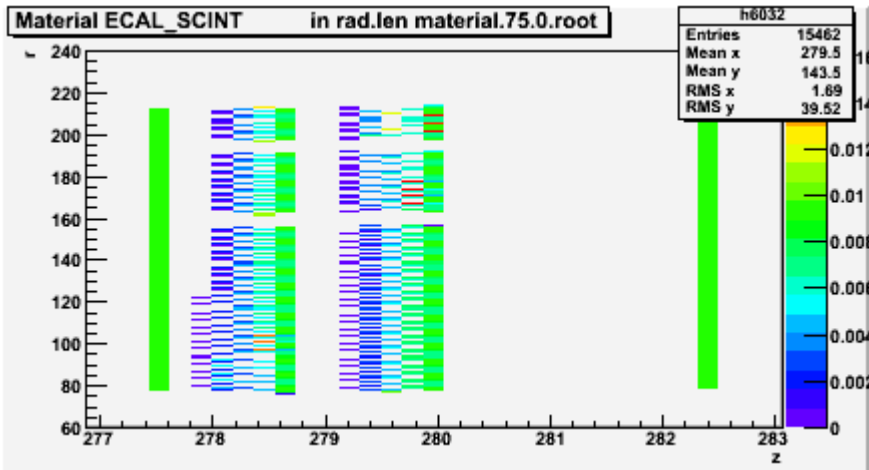
Sector 01-12 boundary  
 $\phi$  slices in  $1^\circ$  steps from  $71^\circ$  to  $75^\circ$

Expected pattern is seen

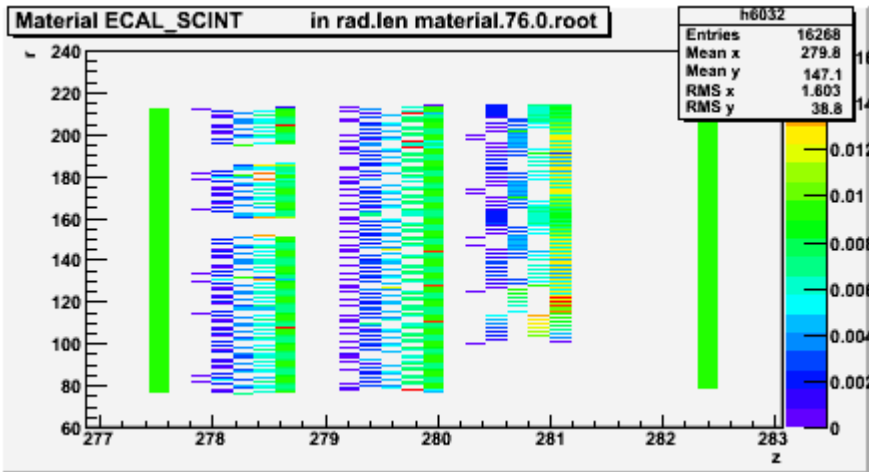
Sector 01-12 boundary  
 $\phi$  slices in  $1^\circ$  steps from  $75^\circ$  to  $79^\circ$

Expected pattern is seen

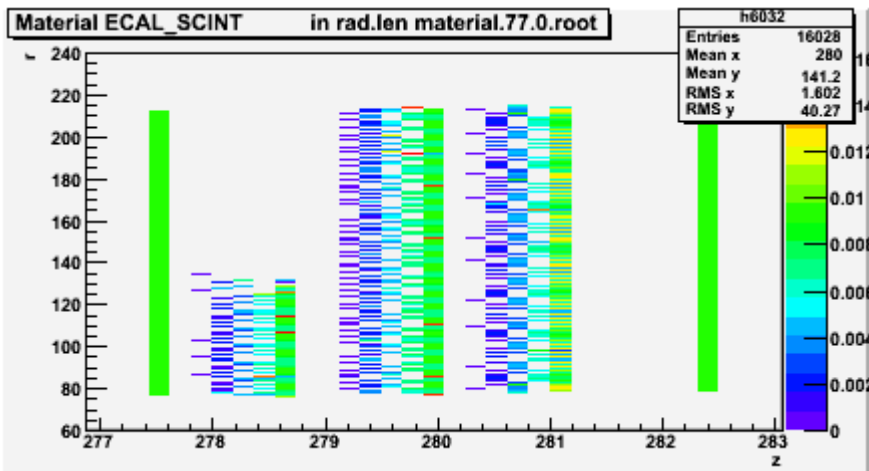
$\phi = 75^\circ$



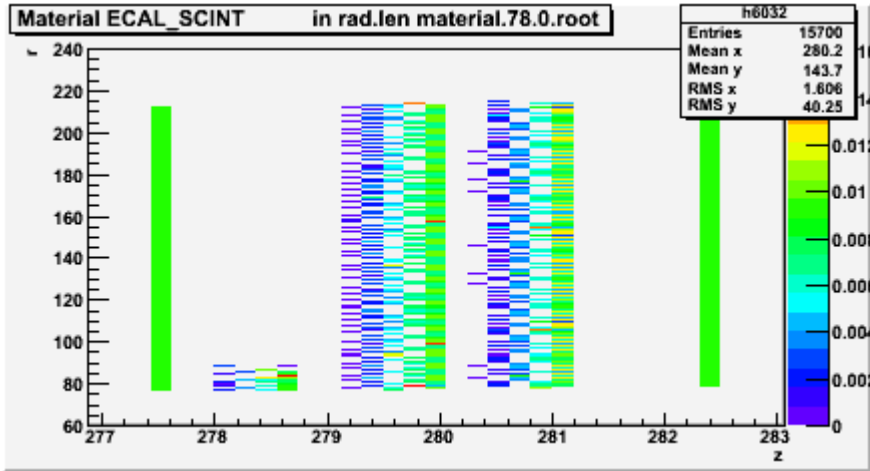
$\phi = 76^\circ$



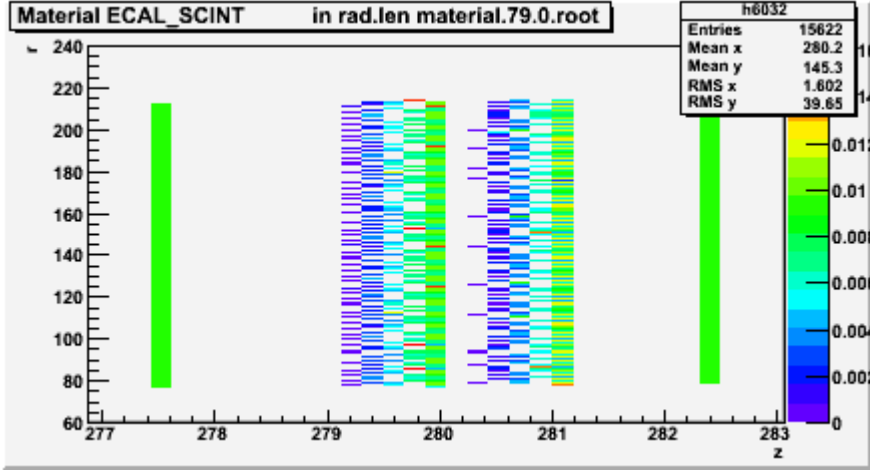
$\phi = 77^\circ$



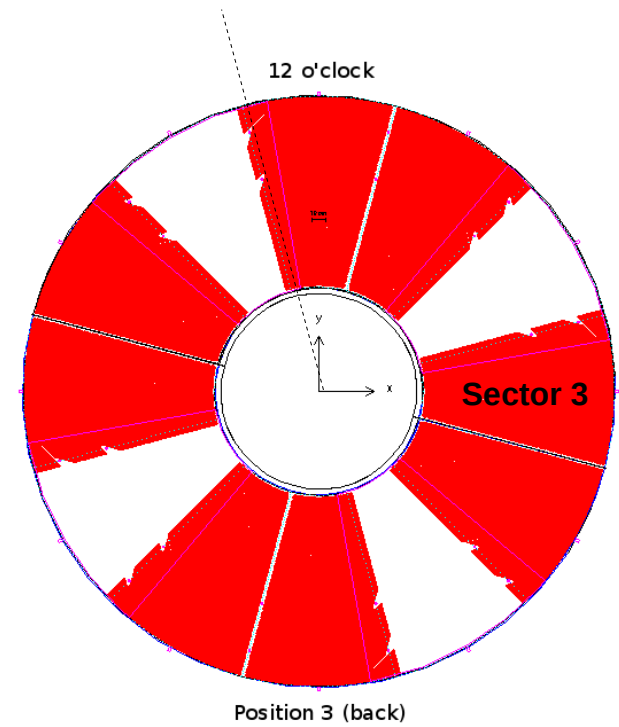
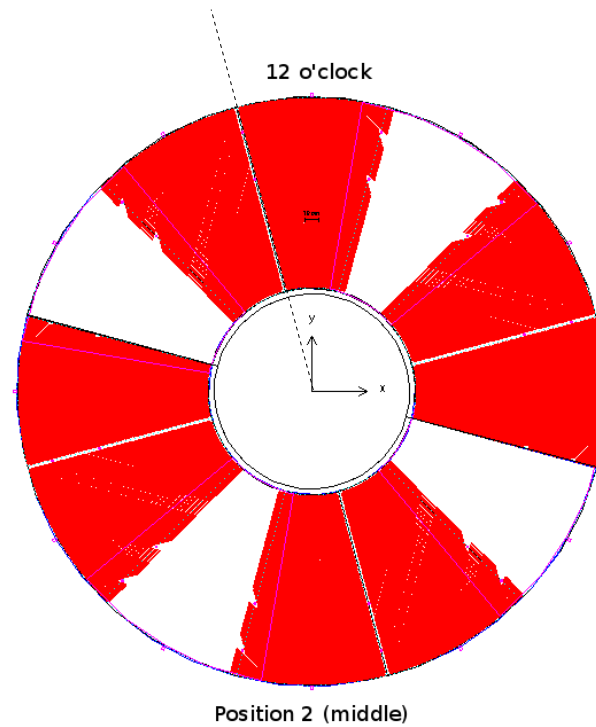
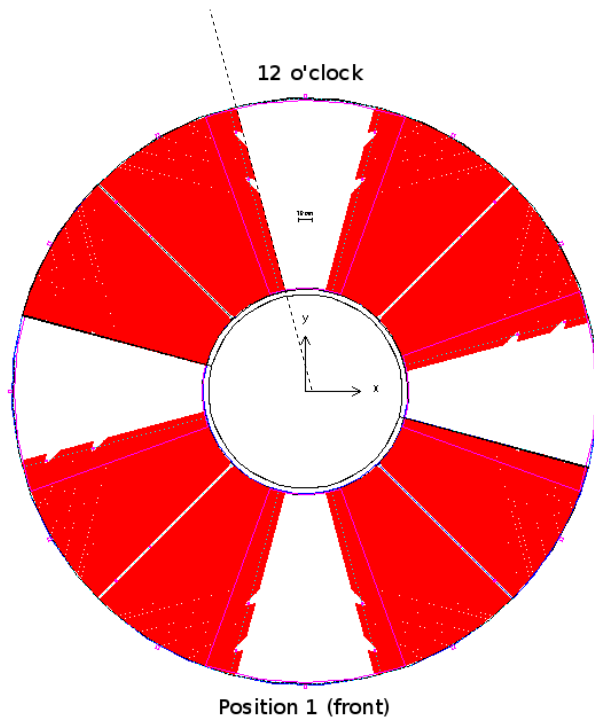
$\phi = 78^\circ$



$\phi = 79^\circ$



# Expected Pattern



At  $105^\circ$  expect:

- position 1 filled
- position 2 empty
- position 3 filled

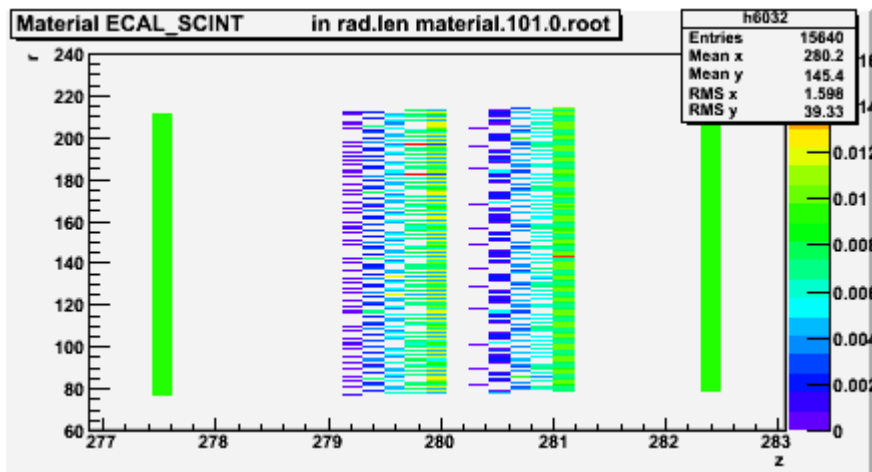
At  $< 105^\circ$  expect:

- position 1 empty or partial
- position 2 filled
- position 3 filled

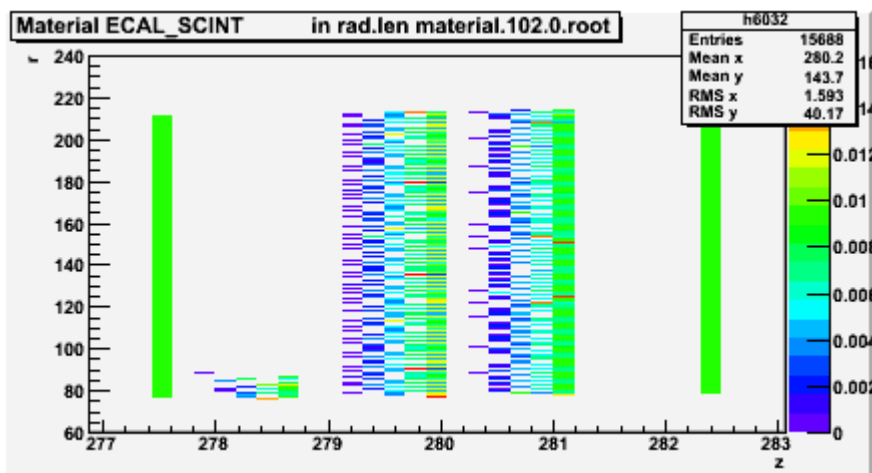
At  $> 105^\circ$  expect:

- position 1 filled
- position 2 filled
- position 3 empty or partial

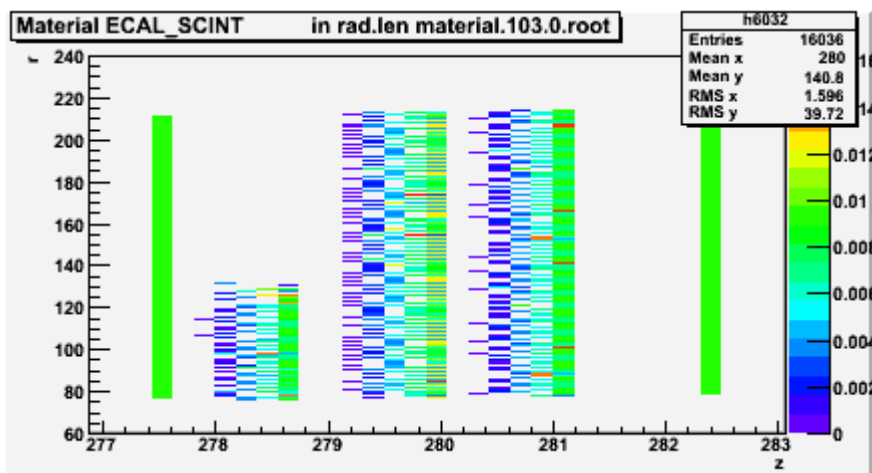
$\phi = 101^\circ$



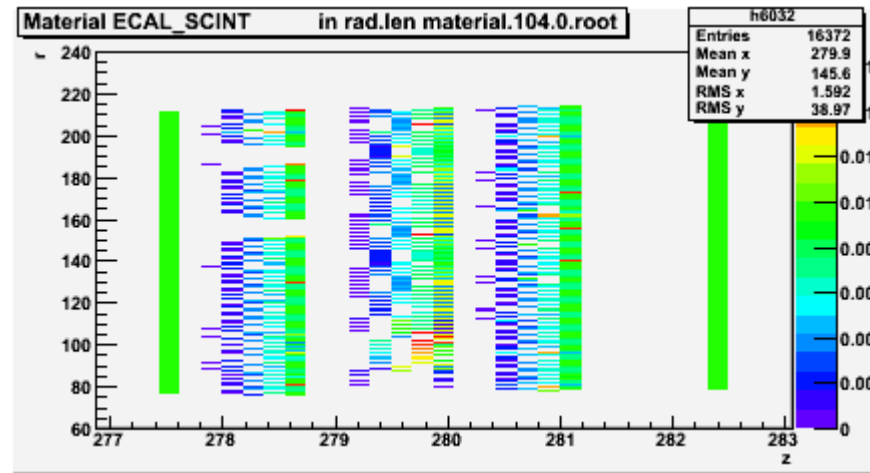
$\phi = 102^\circ$



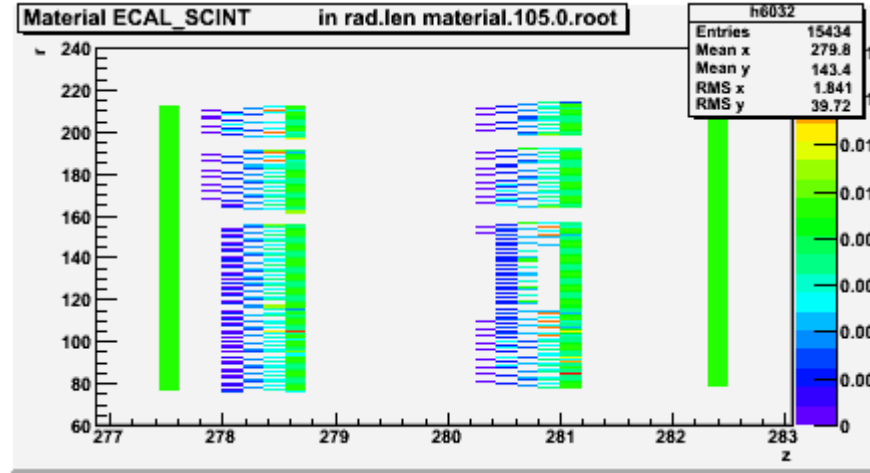
$\phi = 103^\circ$



$\phi = 104^\circ$



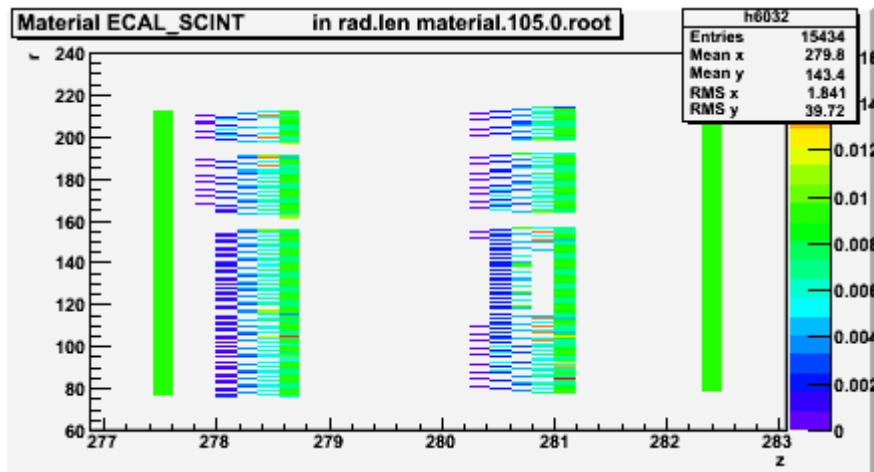
$\phi = 105^\circ$



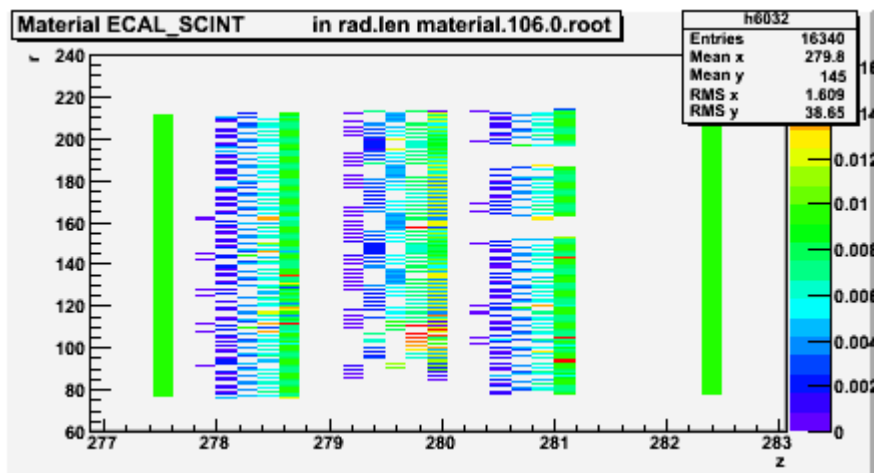
Sector 12-11 boundary  
 $\phi$  slices in  $1^\circ$  steps from  $101^\circ$  to  $105^\circ$

Expected pattern is seen

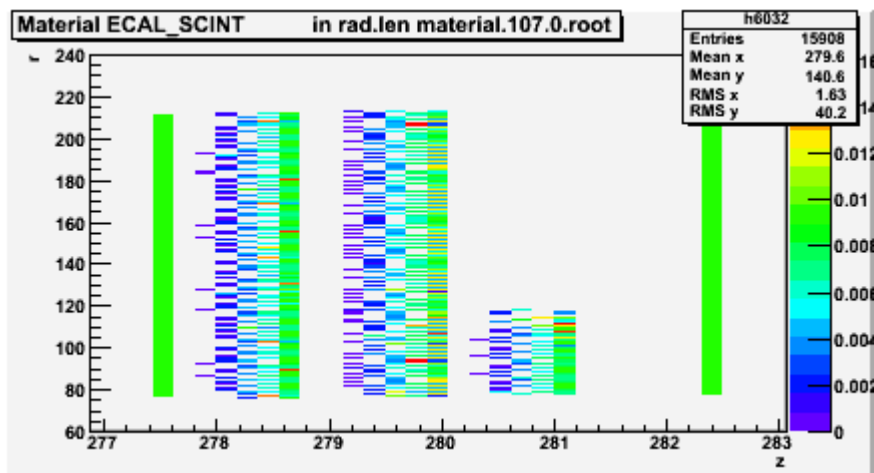
$\phi = 105^\circ$



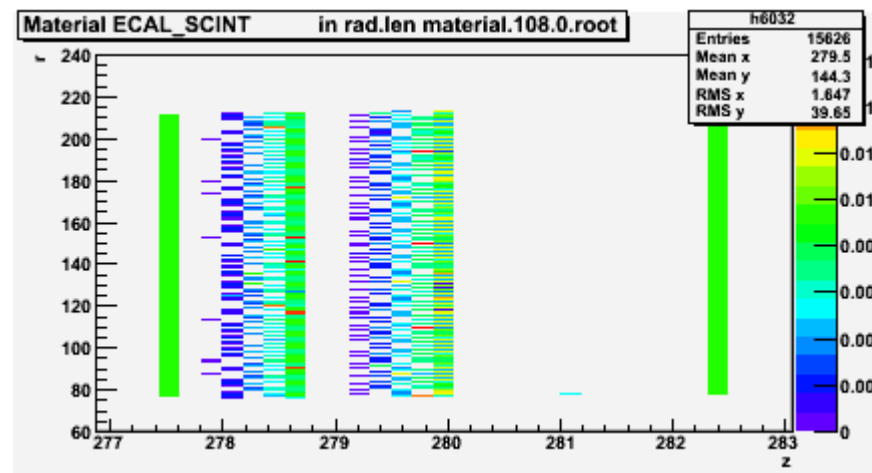
$\phi = 106^\circ$



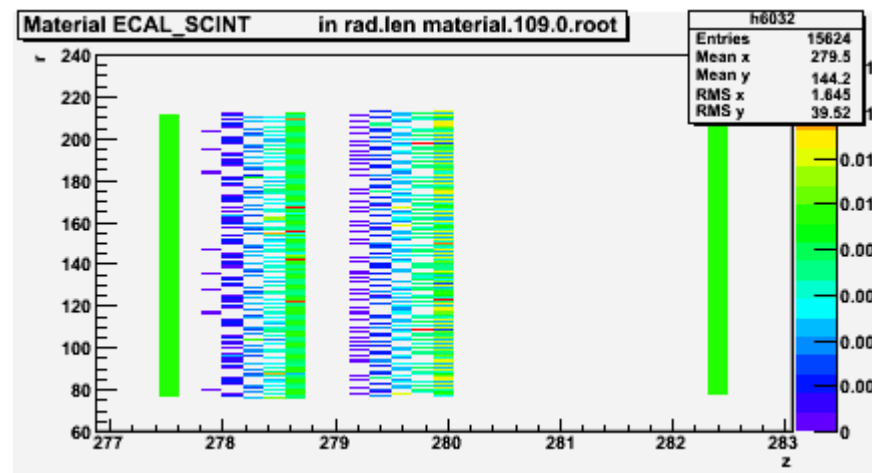
$\phi = 107^\circ$



$\phi = 108^\circ$



$\phi = 109^\circ$

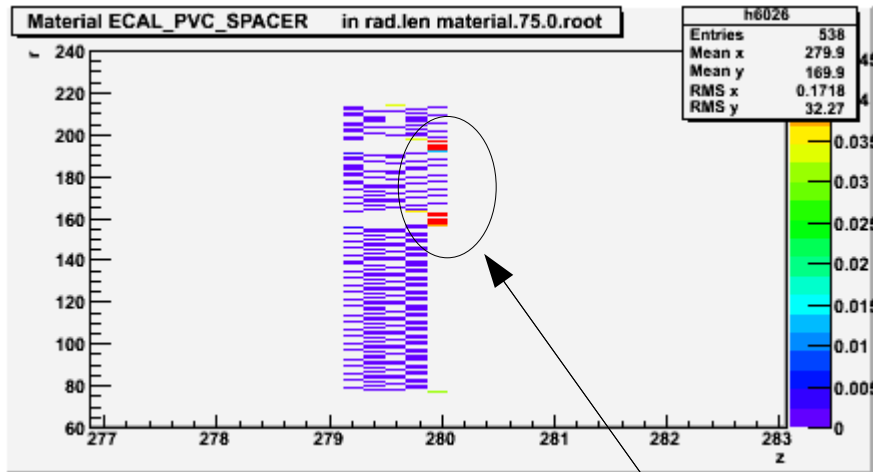


Sector 12-11 boundary  
 $\phi$  slices in  $1^\circ$  steps from  $105^\circ$  to  $109^\circ$

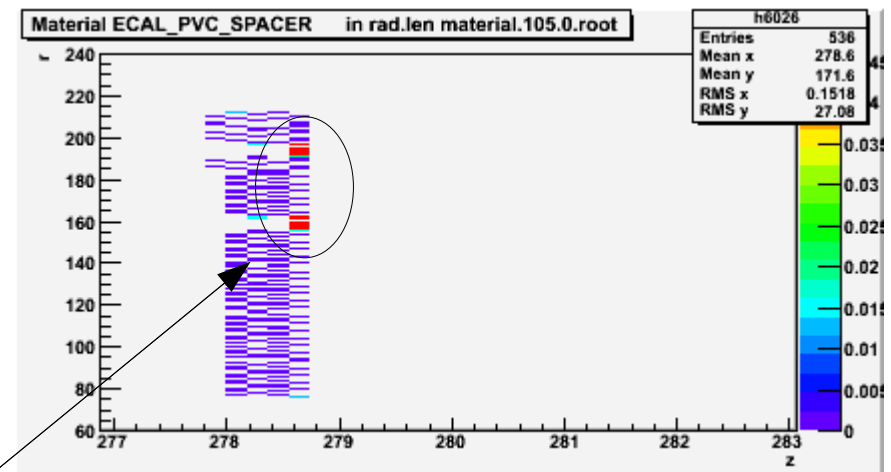
Expected pattern is seen

The spacer layers (PVC) should show up in the cutout areas of the SMD planes

$\phi = 75^\circ$



$\phi = 105^\circ$



Spacer shows up in notches as expected

Spacer material also showing up in tiny,  $< \sim 0.1$  mm spaces in between each SMD strip in the overlap region. Adds  $< 0.1E-3$  radiation lengths.