

# SVT in FastSim

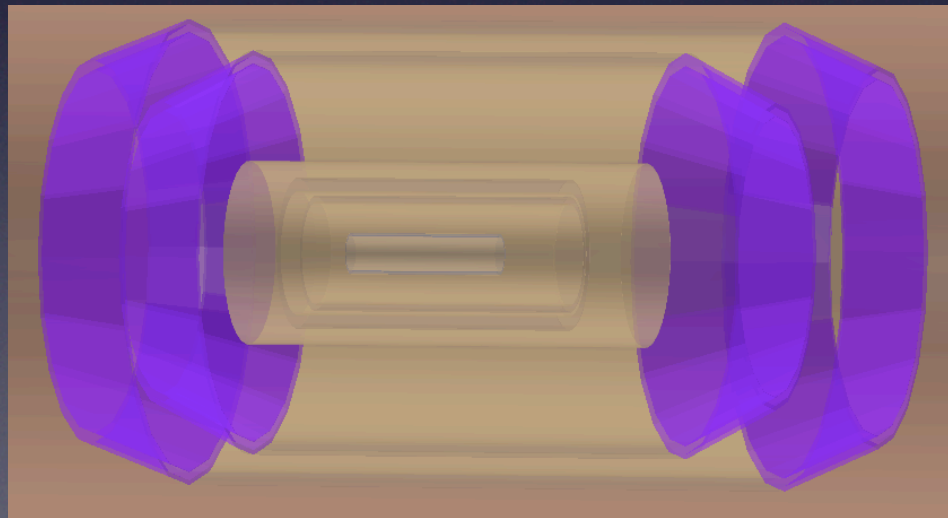
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SuperB meeting@Orsay  
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# FastSim Configuration

- Simplified Geometry
  - cylindrical layers, Overlaps + Gaps modeled statistically
- Materials are described as in BaBar
  - weight-normalized admixtures of elements
- Configuration defined in XML file
  - PacTrk/Si\_SuperB.xml
  - PacTrk/Si\_BaBar.xml

# Si\_SuperB Baseline

- “Layer0” as described by G. Rizzo et al.
  - 1.5cm average radius,  $-3.5\text{cm} < Z < 9.5\text{cm}$
  - $2 \times 0.05\%$  (Si) +  $0.35\%$  (CF) +  $2 \times 0.17\%$  (Al + Kapton)
  - $10\mu\text{m} \times 10\mu\text{m}$  resolution (+10% tails)
  - 95% efficiency, 1% overlap
- Outer layers as BaBar SVT

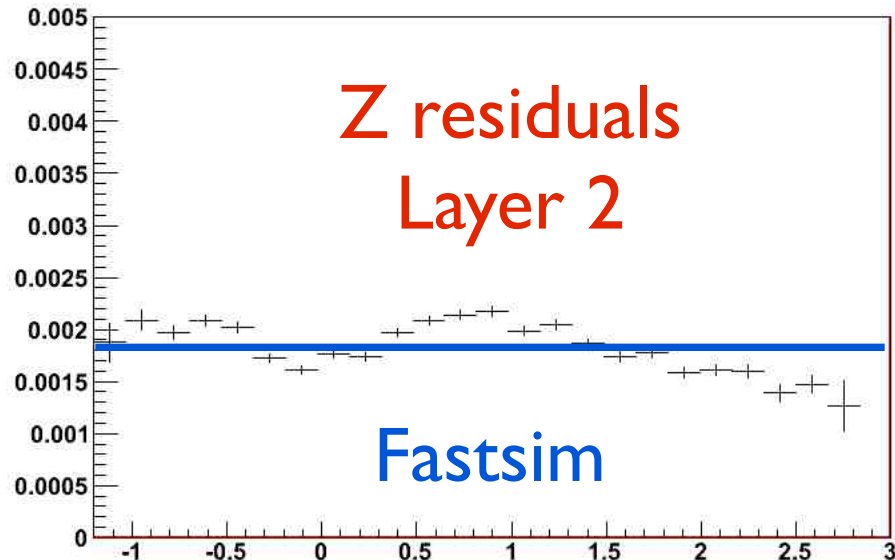


# Outer layer tuning

- Use BaBar data to tune single-hit resolutions
  - BPC muons
  - tight quality cuts
    - $NDch > 30$
    - $NSvt = 5$  layers
- Look at hit residuals per layer
  - Estimate contribution from track
  - as a function of angle, ...

# Resolution vs $\tan(\text{dip})$

Z resid sigma vs tanDip

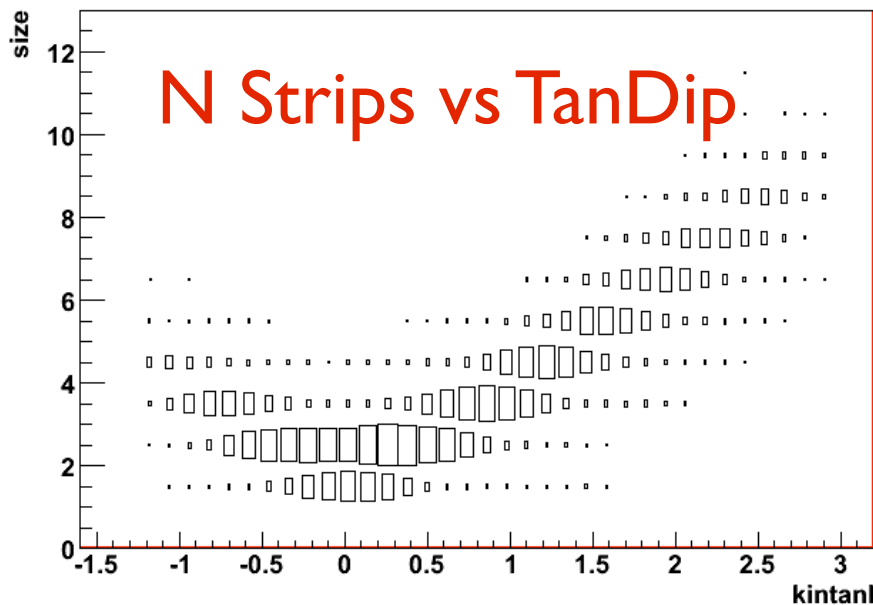


Layer 2 estimated Z error vs tanDip

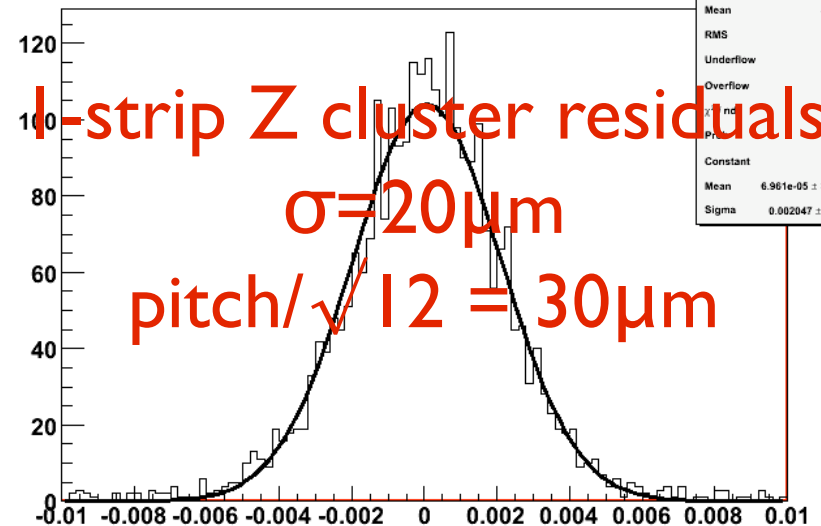


# Resolution at dip=0

size:kintanl {(kalmom>3.0&&fitcon>0.01&&nsvt==10)&&(type==2&&view==1&&layer==1)}



resid {(kalmom>3.0&&fitcon>0.01&&nsvt==10)&&(type==2&&view==1&&layer==1&&size==1)}

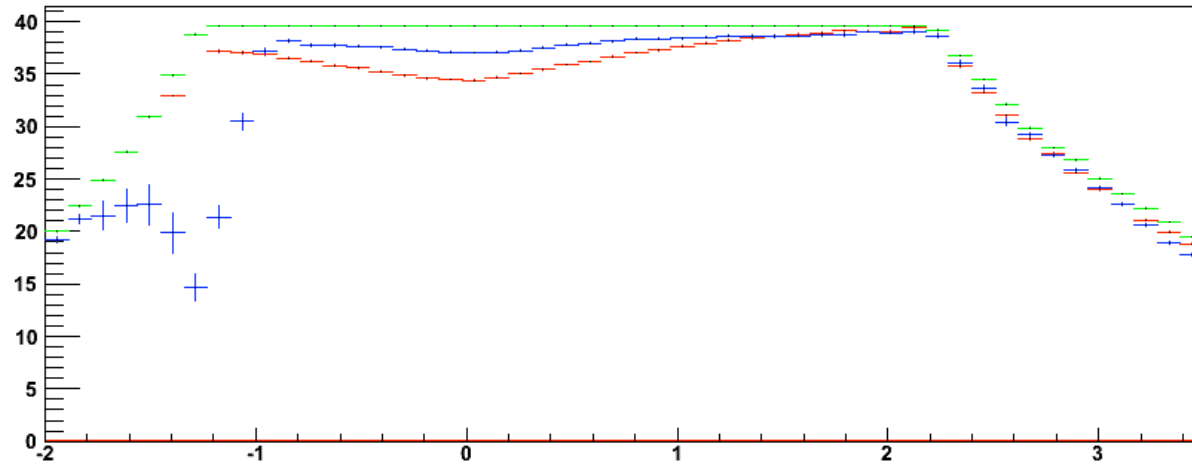


r1strip

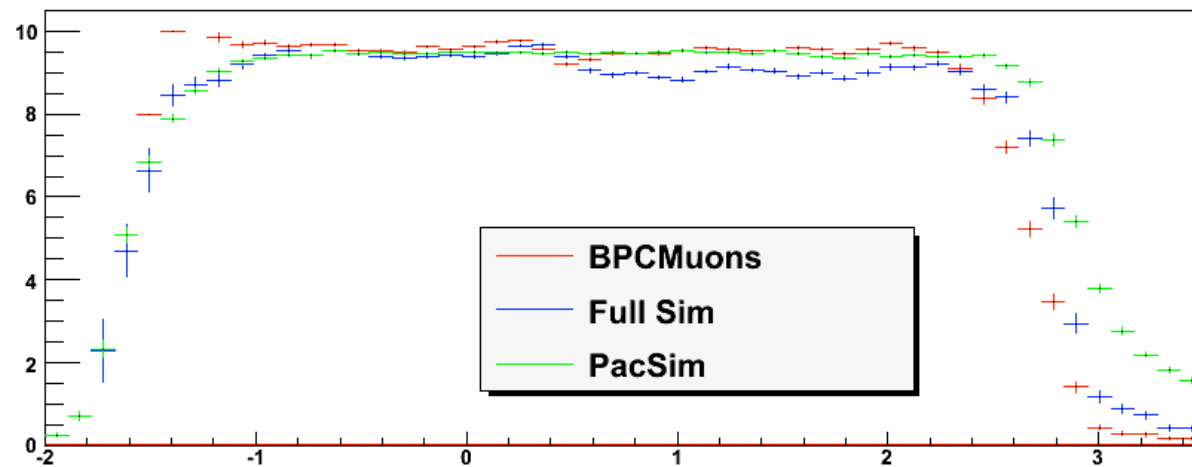
Entries	2806
Mean	5.678e-05
RMS	0.002326
Underflow	16
Overflow	10
% Invalid	1113.9 / 87
Pr	0.02823
Constant	104 ± 2.6
Mean	6.961e-05 ± 3.997e-05
Sigma	0.002047 ± 0.000033

# NHits vs tan(dip)

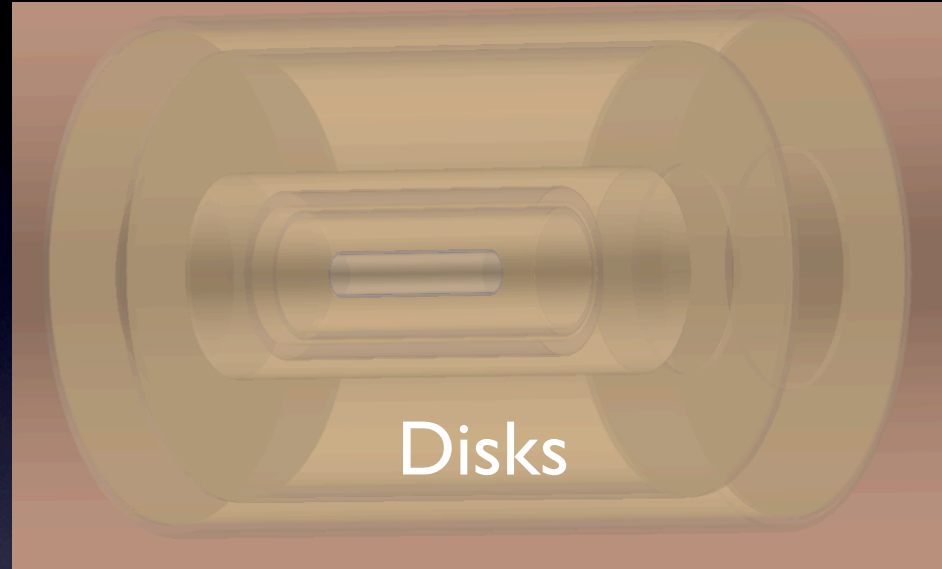
NDch vs tandip



NSvt vs tandip

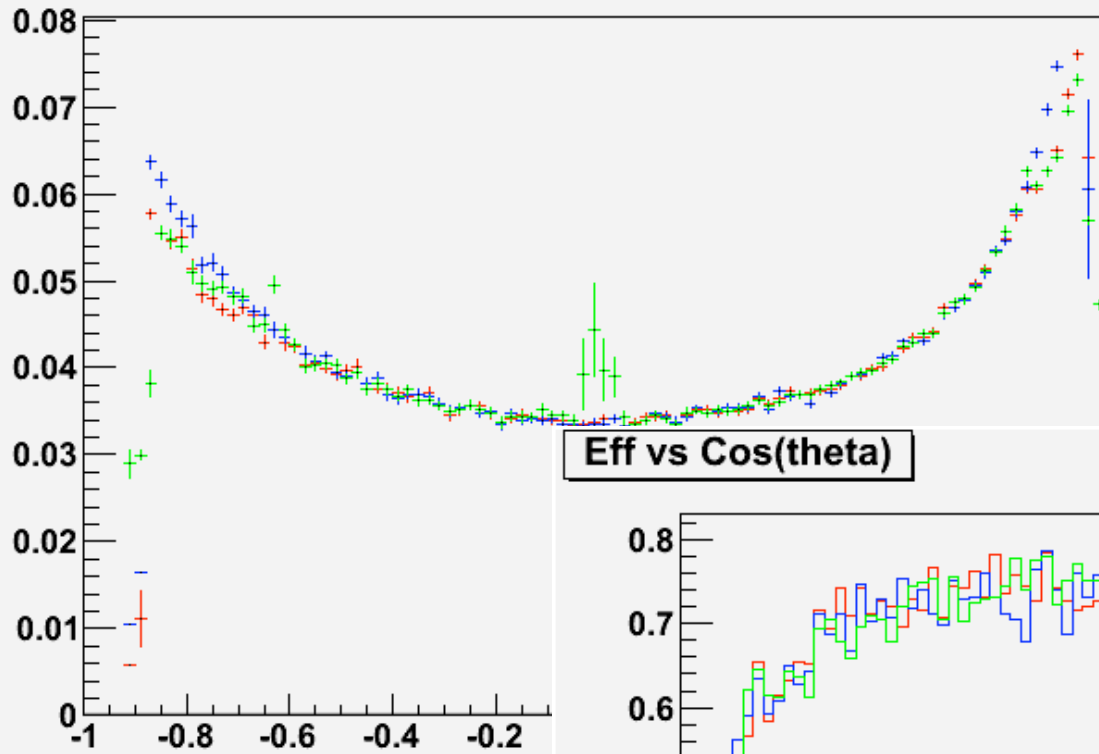


# Configuration Variations

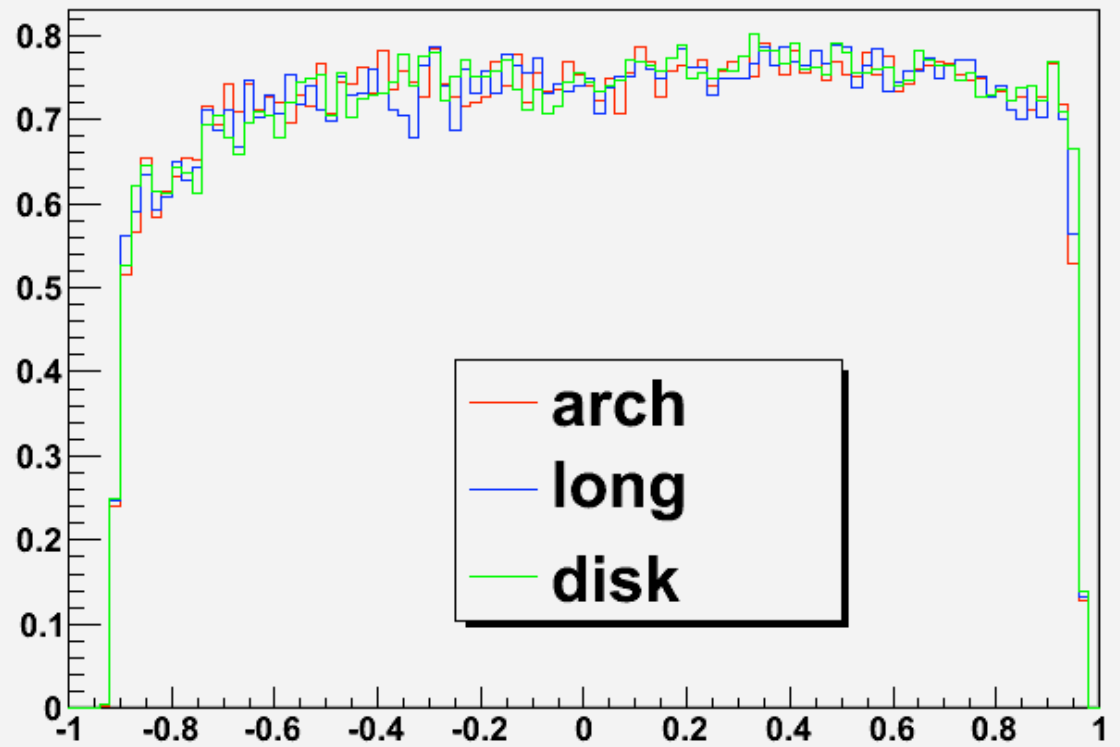




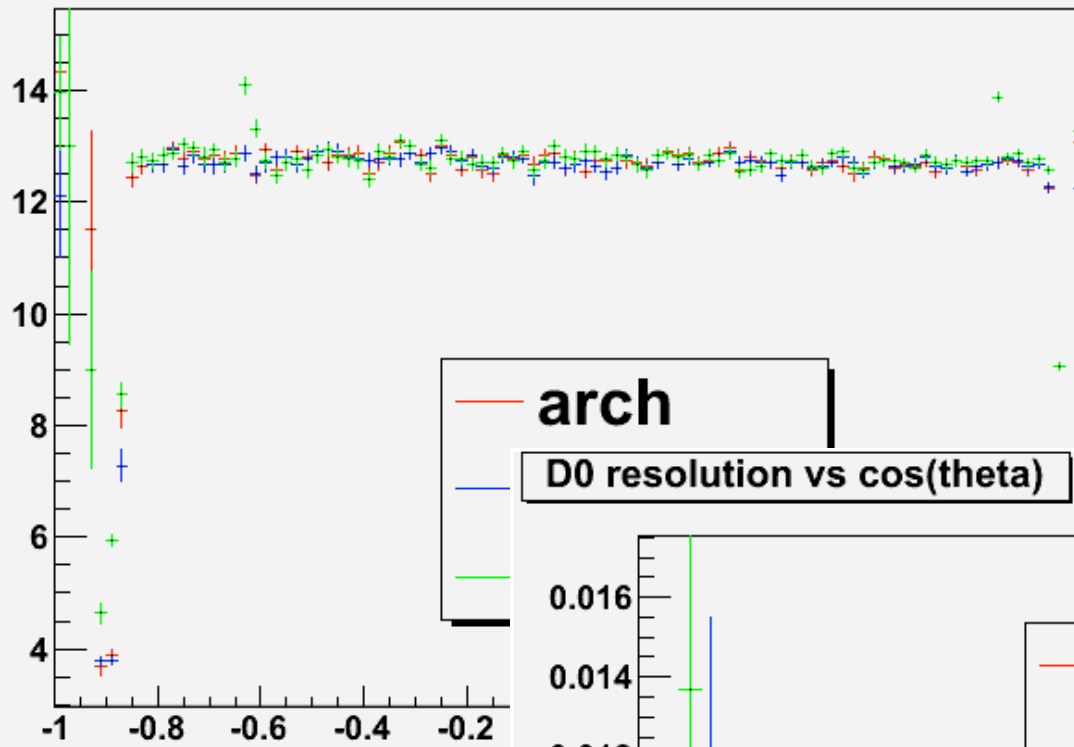
Integrated radlen vs Cos(theta)



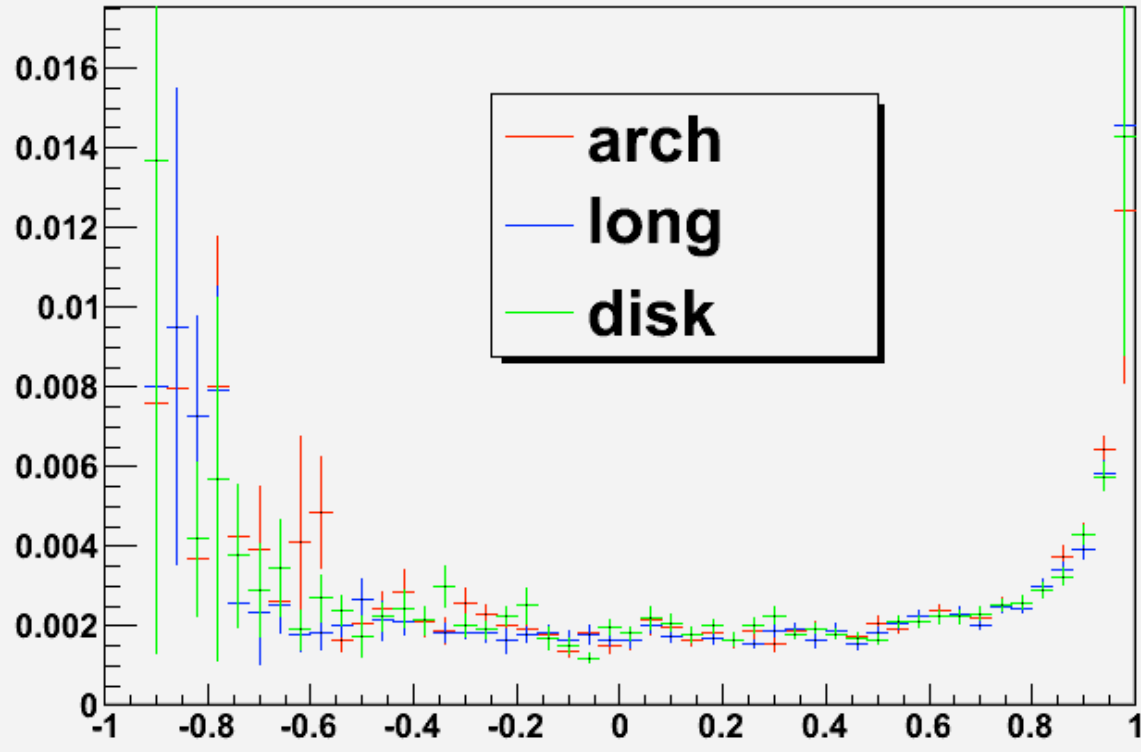
Eff vs Cos(theta)



NSvt vs Cos(theta)



D0 resolution vs cos(theta)



# Conclusions

- Si is reasonably modeled in FastSim
  - Experts should check Layer0 parameters!
  - Outer layer response tuned to BaBar data
- Configuration is easy to change
  - PacTrk/Si\_SuperB.xml
- Preliminary simple configuration comparison
  - Arch vs Long Barrel vs Disks
  - Layer 2?