# SPD update

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### SPD check with different HGC window

#### Window thickness test for hgc (NOT hgc\_moved)

material	Win_front	gas	mirror	Win_back	
HGC original	kevlar+mylar	C4F10 at 1.5atm	CFRP	Al	
HGC real	CF+mylar	C4F10 at 1.5atm	CFRP	Al	
HGC CO2	Al	CO2 at 5atm	CFRP	Al	

Length in cm	Win_front	gas	mirror	Win_back	
HGC original	0.06	100	0.3	0.10	
HGC real	0.24	100	0.3	0.64	
HGC CO2	0.50	100	0.3	1.28	

Length in radiation length	Win_front	gas	mirror	Win_back	total
HGC original	0.002	0.033	0.011	0.011	0.057
HGC real	0.009	0.033	0.011	0.072	0.125
HGC CO2	0.056	0.025	0.011	0.144	0.206

#### Zhiwen's slide

## Edeposit Comparison



0.5 MeV cut was used for Zhiwen's previous rate estimation

### Reminder

- Photon reject was studied with pi0 photons combined with low energy electron and photon background contribution. In the following slides, we used Hall D generator for pi0.
- Half MIP cut (0.86/2 MeV) was used for studying photon rejection vs segmentation
- pCDR goal for photon rejection by FASPD is 5:1

## From last report



Rejection factor = Total events /(total I Edep> cut)

### Simulation indicates more contribution from conversion electrons (increased material budget)



## **R-segmentation**



- Did rough segmentation to check radius dependence of photon rejection. It doesn't add up to dimensions in wiki (96 cm, 210 cm); adjust the most outer part to fit within 210 cm.
- Assume uniform distribution in azimuth

Range 1: 96 - 119 Range 2: 119 - 148 Range 3: 148 - 177 Range 3: 177 - 210



### Rate (all incident particles)

• Comparison of rates for incident particles (BeamOnTarget)



### **EM background**



# pi0 decay photons



### **R-dependent photon rejection**



### Backup