Solid State Photo-sensors and Scintillator Direct Coupling Measurements

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Source Scans

- Performed with Sr-90 source
- Collimated to 1/32"
- Green scintillator
- Hamamatsu MPPC
- S/N~100
- Step size 1/32" central region, 1/16" elsewhere





Cell Treatment





Central Scan









Corner-to-Corner Scan





Scan Conclusions

- The thicker the scintillator the more uniform cell response.
- Scan results indicate that nonuniform area localized near MPPC (+/5 mm).
- Because of high signal to noise ratio may be possible to reduce bright spot non-uniformity.



Cosmics: Apparatus & Positions





Central Position Spectrum (CPTA)









Central Position Spectrum (Hamamatsu)





Edge Position Spectrum (Hamamatsu)





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Cosmic Ray Results

Position	CPTA(+/-15%)	Hamamatsu
Center	100%	16.8+/-2.5 PE
Edge	92%	19.3+/-3.0 PE
Corner	71%	Not Measured
Center (no grease)	Not Measured	10.8+/-1.5 PE



Cosmic Conclusions & Plans

- Cosmic ray results indicate efficient MIP detection & good noise discrimination
- Seems to be little dependence on sensor position – high response region "lost in tail"
- Plans
 - Scans and Cosmic Rays
 - Blue and Green Scintillator
 - Surface Treatments
 - Different Sensors
 - An integrated PCB with scintillator and sensors both mounted on surface in preparation, aiming for beam tests this year or next.





Calibration





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