# Solid State Photo-sensors and Scintillator Direct Coupling Measurements 

## J erry Blazey <br> Northern I Ilinois University

LCWS07-Hamburg
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## Source Scans

- Performed with Sr90 source
- Collimated to 1/ 32"
- Green scintillator
- Hamamatsu MPPC
- S/ N~100
- Step size 1/ 32" central region, 1/ 16" elsewhere


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## Cell Treatment



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## Offset Scan



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## Corner-to-Corner Scan



- Green Square Cell $31 \mathrm{~mm} \times 32 \mathrm{~mm} \times 6.3 \mathrm{~mm}$


## 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



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## Central Position Spectrum (CPTA)



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## Central Position Spectrum (Hamamatsu)



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## Edge Position Spectrum (Hamamatsu)



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## Cosmic Ray Results

| Position | CPTA(+/-15\% ) | Hamamatsu |
| :---: | :---: | :---: |
| Center | $100 \%$ | $16.8+/-2.5 \mathrm{PE}$ |
| Edge | $92 \%$ | $19.3+/-3.0 \mathrm{PE}$ |
| Corner | $71 \%$ | Not Measured |
| Center <br> (no grease) | Not Measured | $10.8+/-1.5 \mathrm{PE}$ |

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## 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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