

Sharper *Fermi*-LAT Images

*Stephen K N PORTILLO, Harvard University
with Douglas P FINKBEINER*

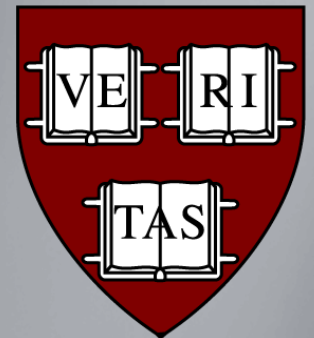
22 October 2014

Fifth International Fermi Symposium, 名古屋市

*Portillo & Finkbeiner, 1406.0507
accepted to ApJ*



**NSERC
CRSNG**



Angular Resolution Matters



Signal Region

Galactic Plane Leakage

Galactic Plane (bright and hard to model!)

Point Spread Function

Multiple Coulomb scattering
in tungsten foils (low E)



Missed silicon hit



Limited silicon strip
position resolution (high E)



Conversion in
support material



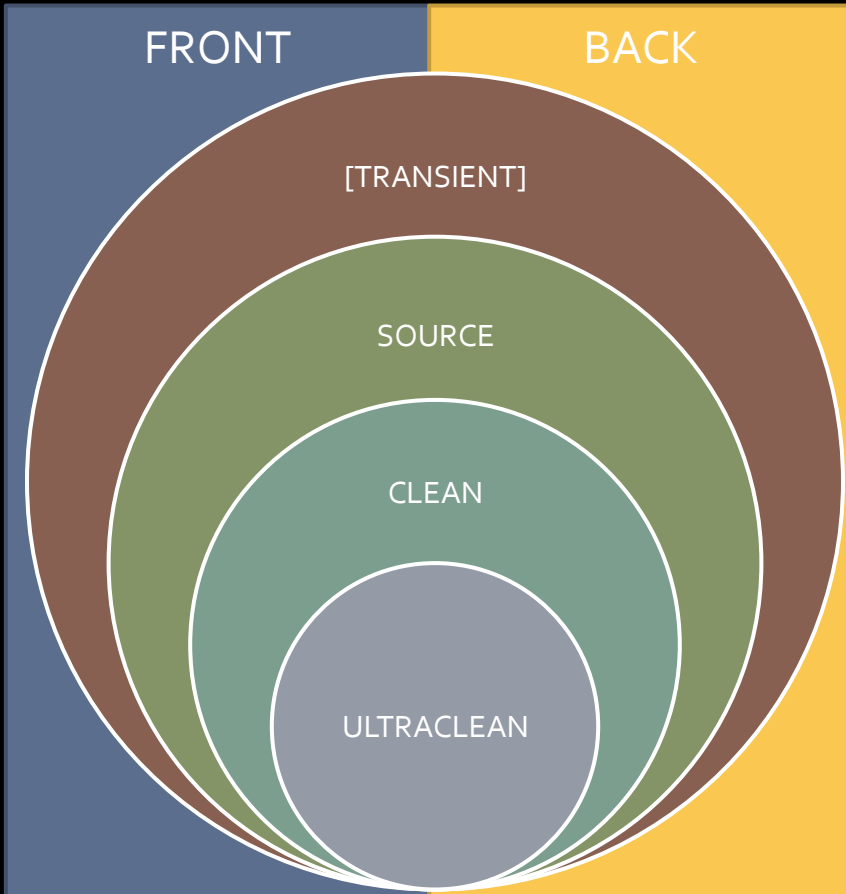
Hard scattering



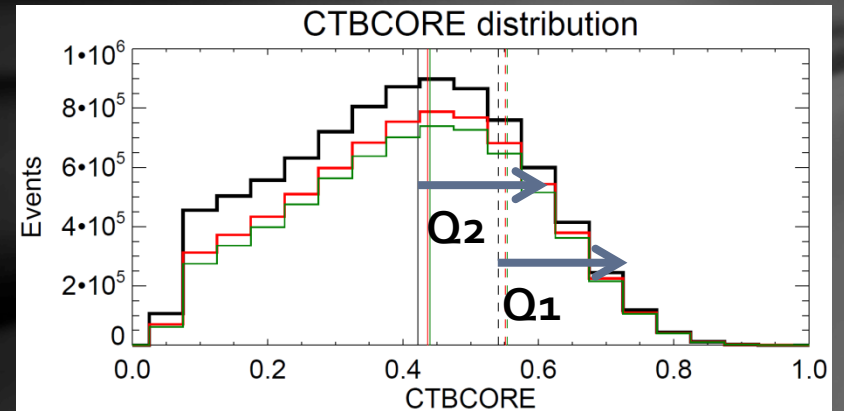
Track confusion



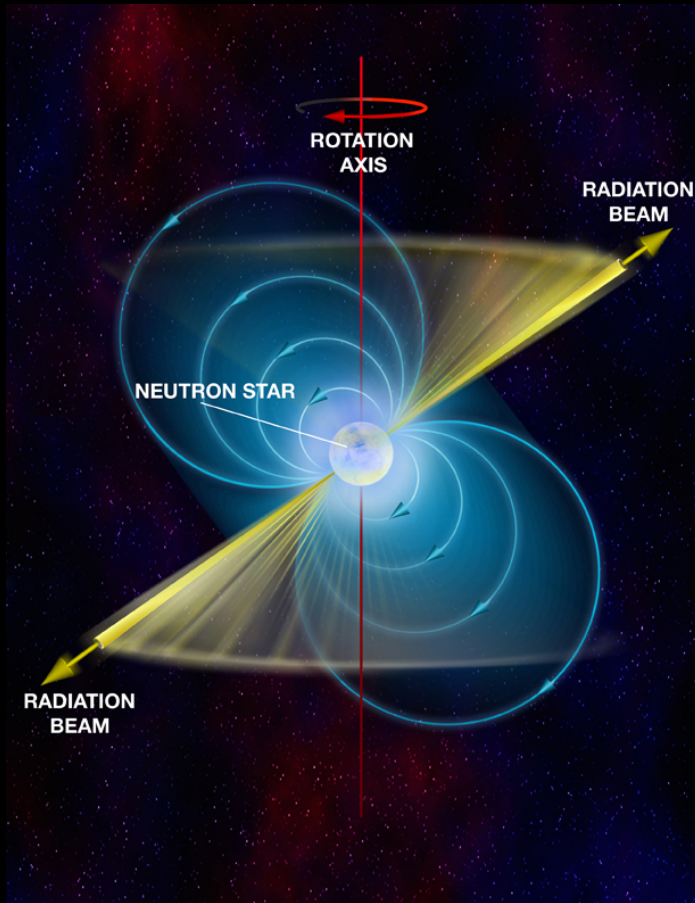
Event Classes + CTBCORE



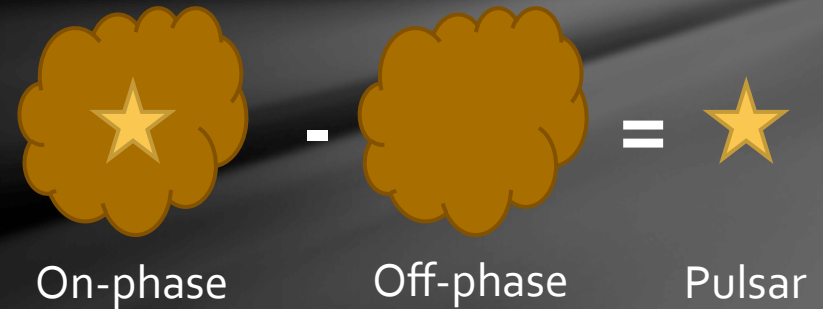
Dividing the front-converting events...



Pulsars as Point Sources

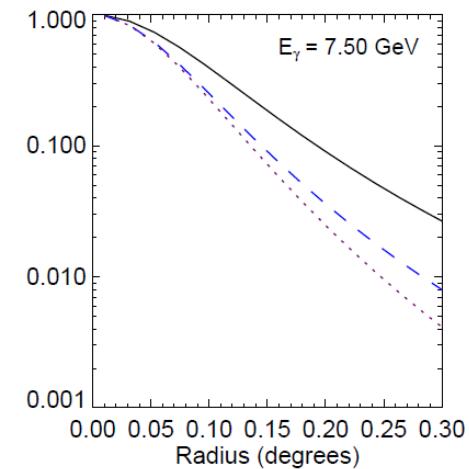
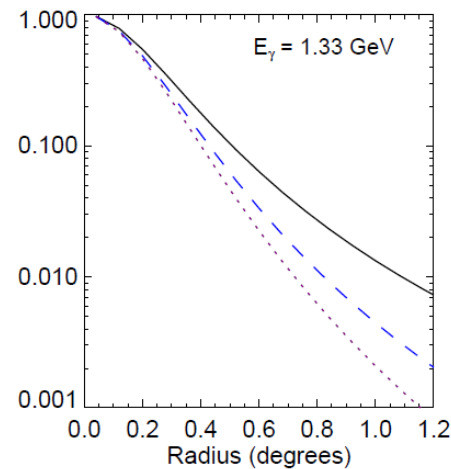
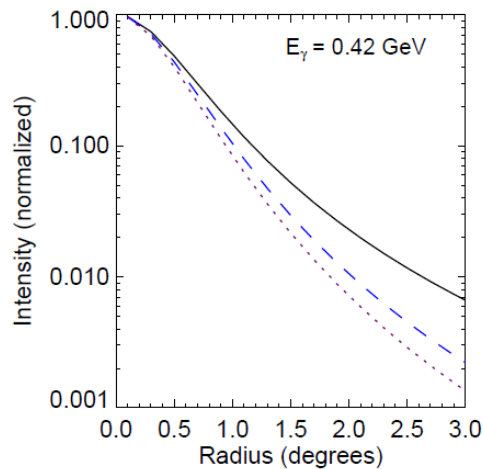
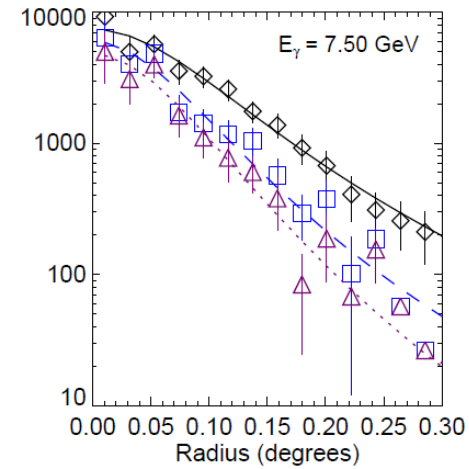
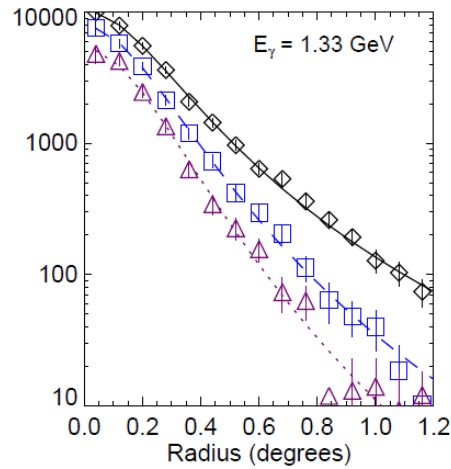
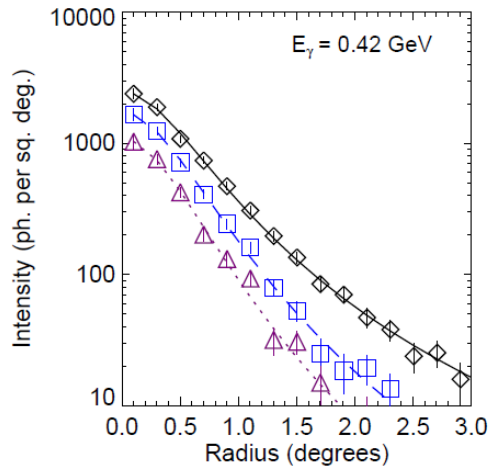


(Bill Saxton, NRAO)



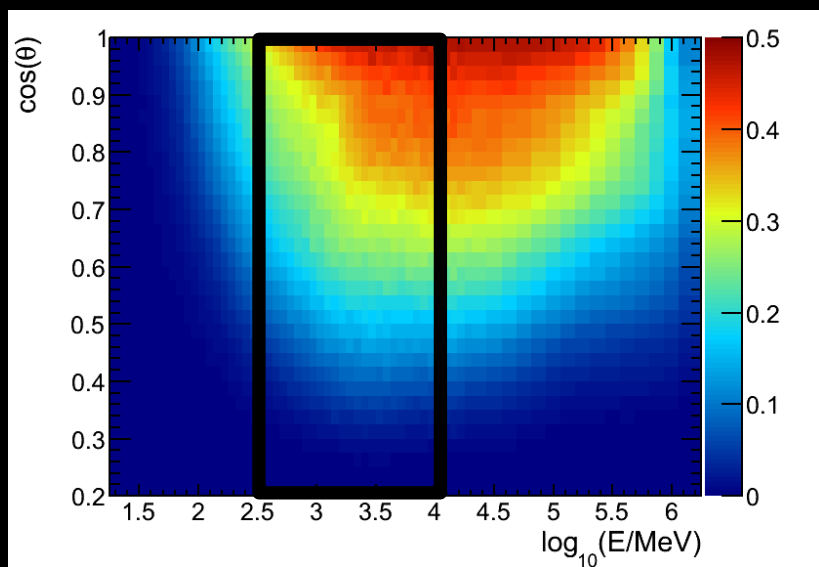
PSF Fitting

ULTRACLEAN: Allfront, Ω_2 , Ω_1



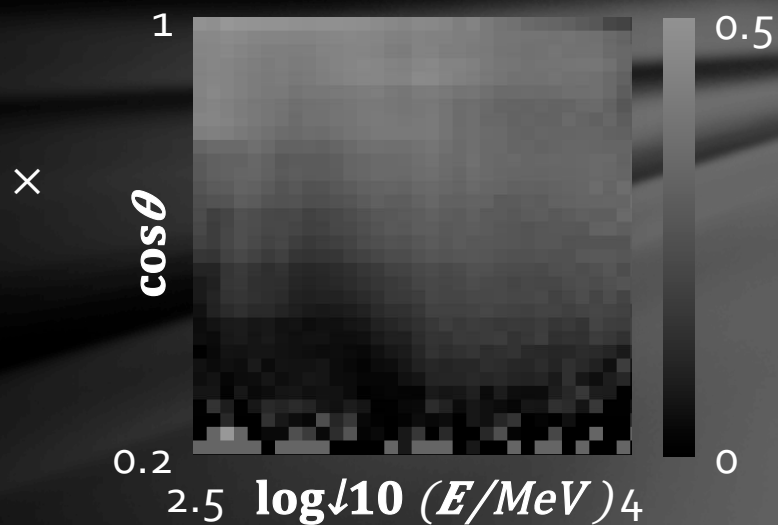
Effective Area

Effective Area, CLEAN (m²)

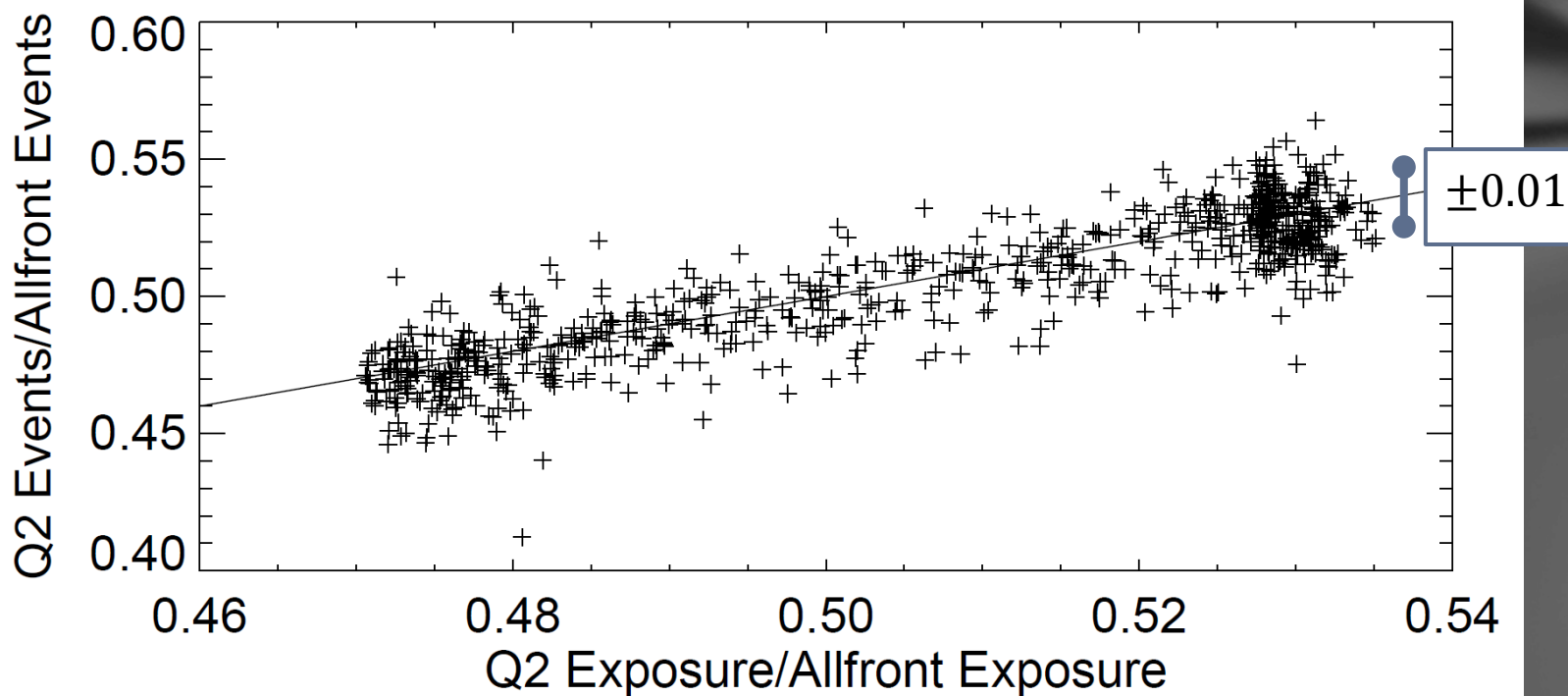


(Fermi Science Support Centre)

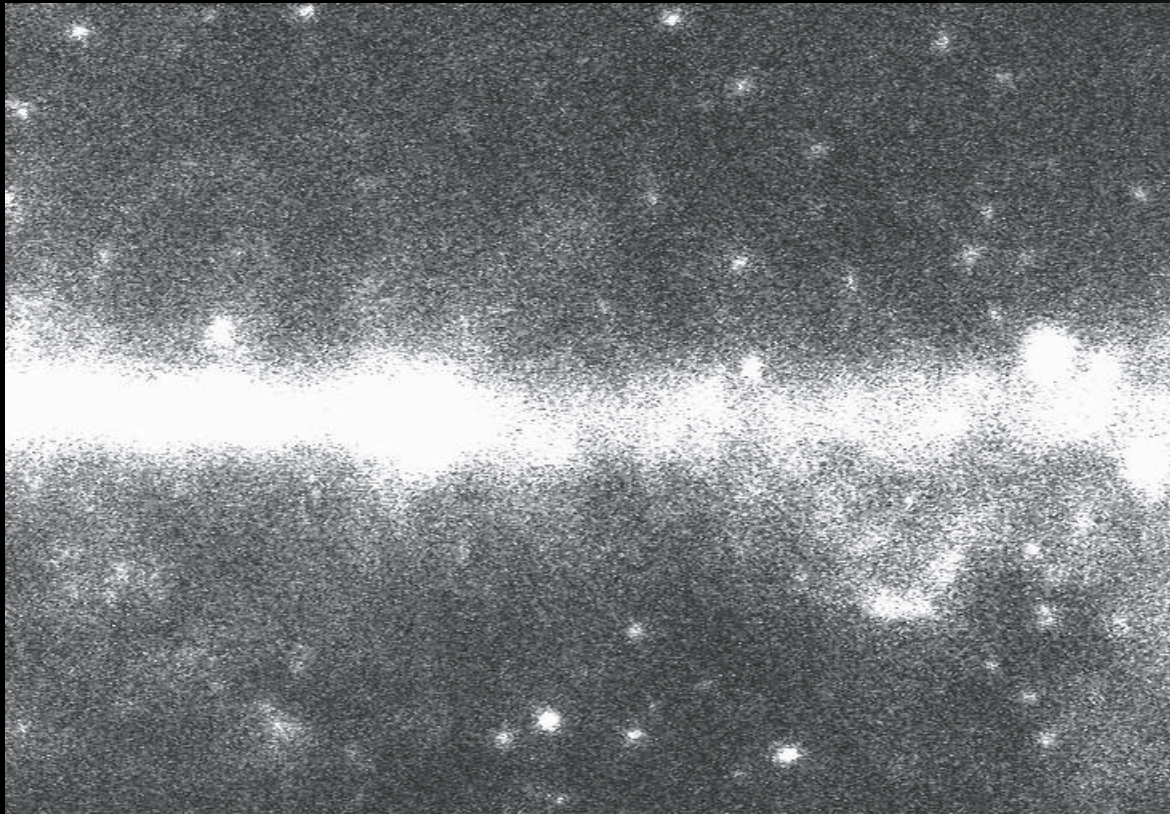
Surviving Fraction, CLEAN, Q₂



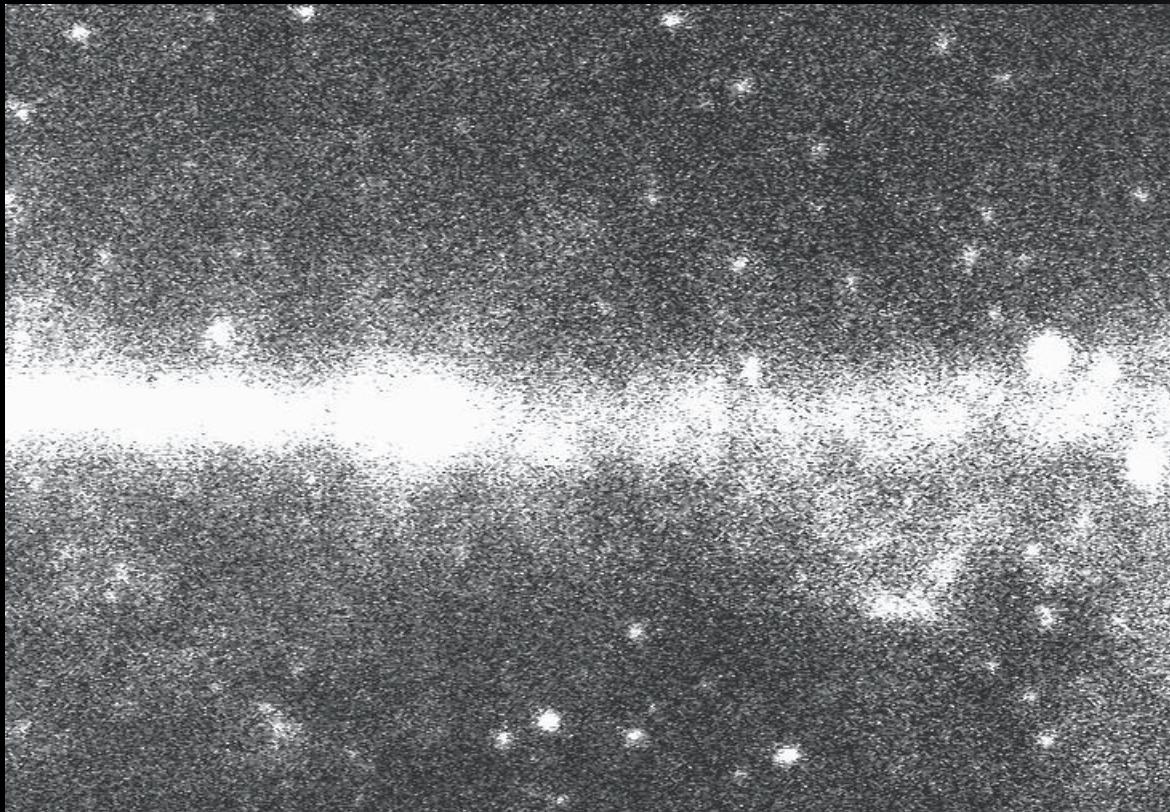
Effective Area Error Estimate



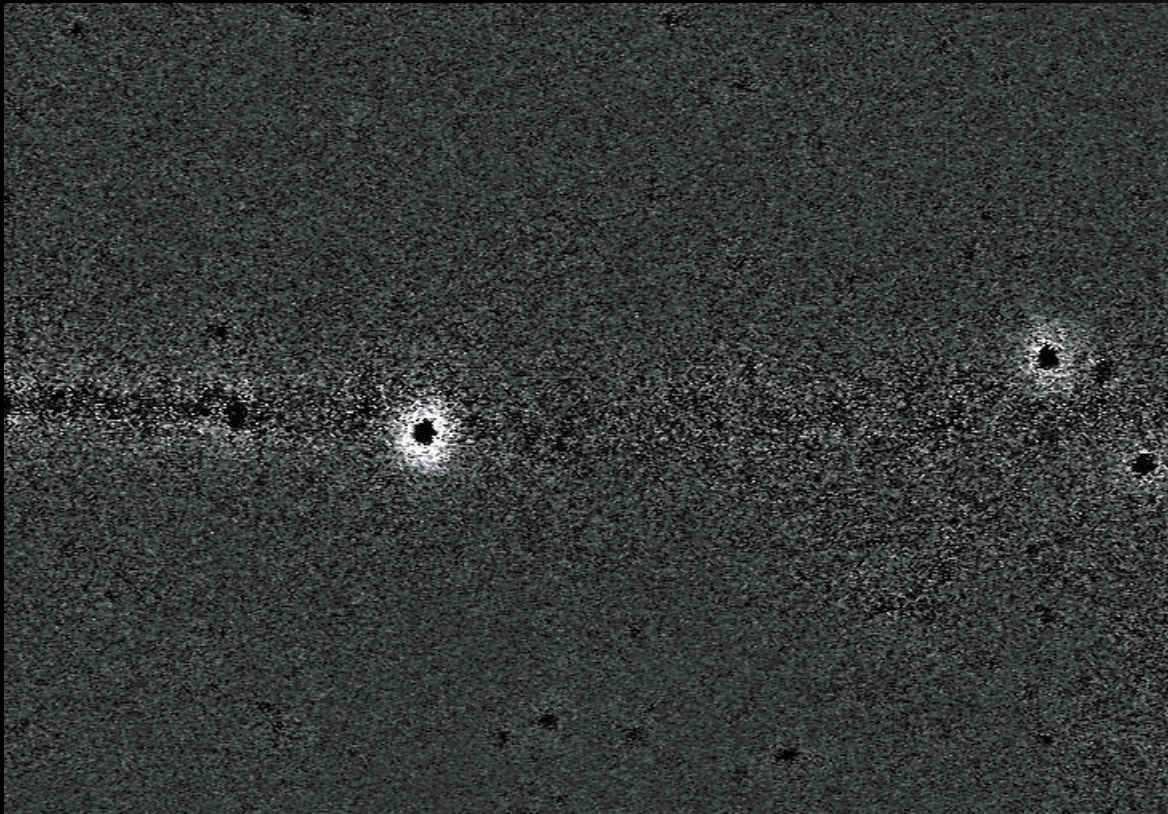
0.3-0.5 GeV, CLEAN, Allfront

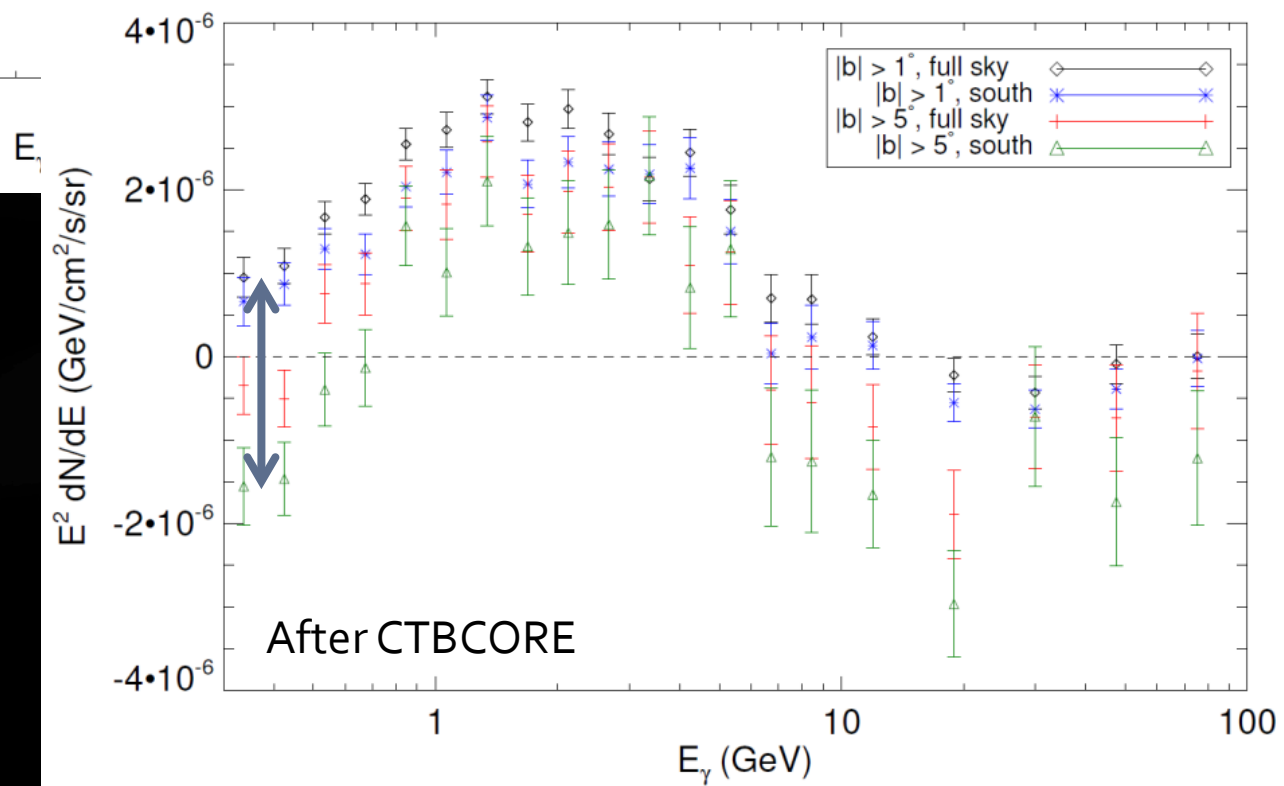
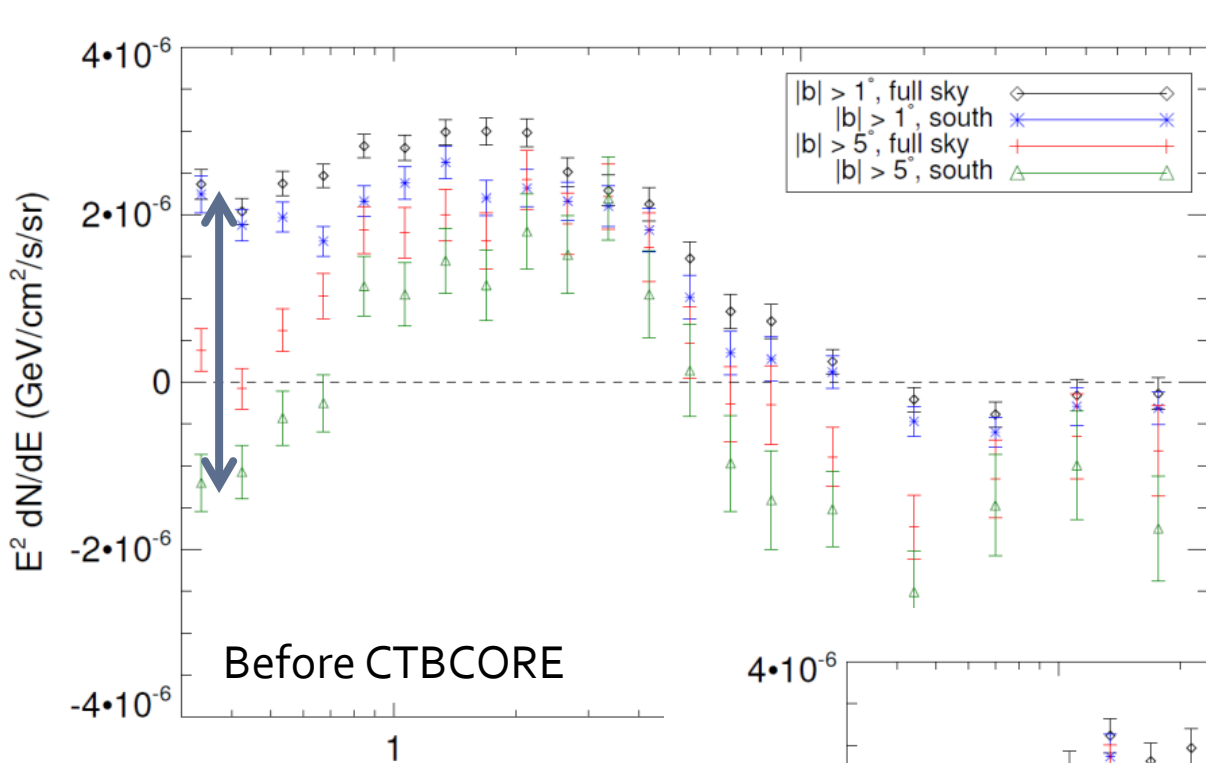


0.3-0.5 GeV, CLEAN, Q₂

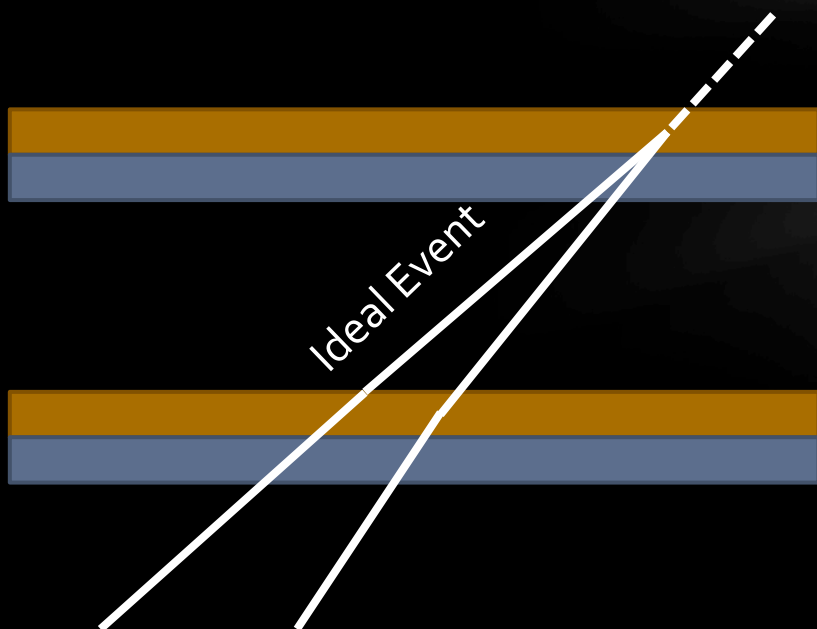
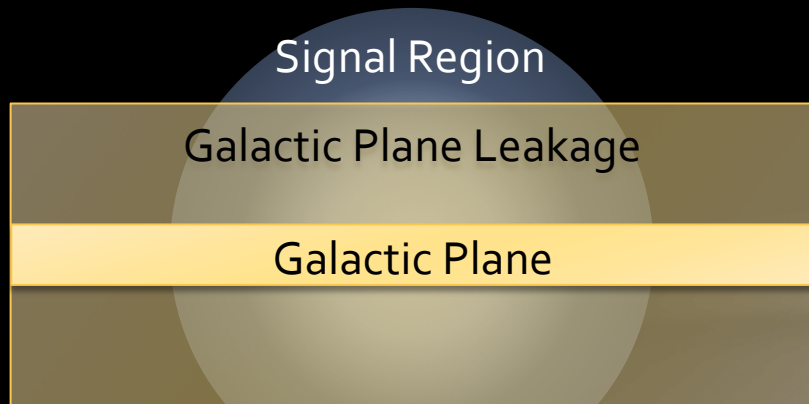


0.3-0.5 GeV, CLEAN, Allfront minus Q_2

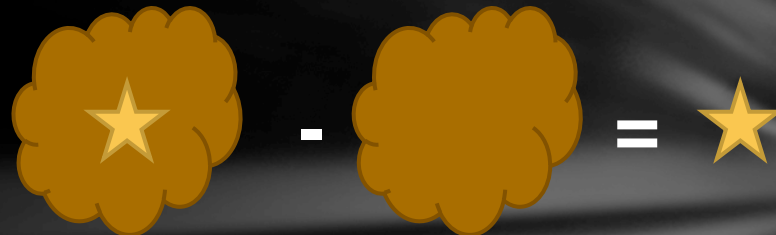




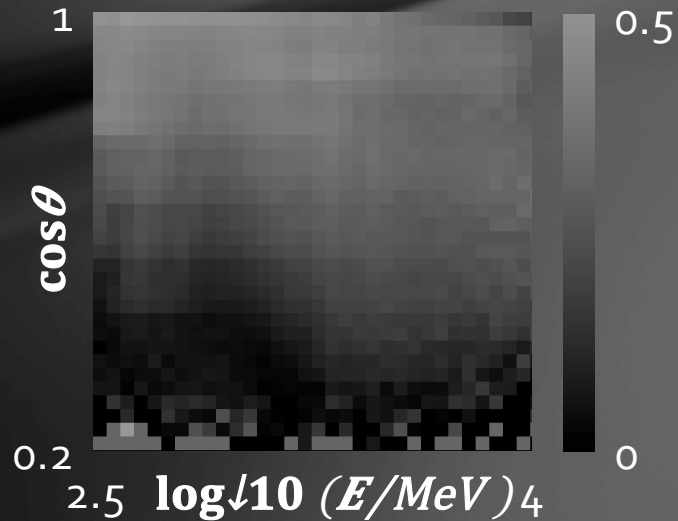
Conclusion



Point-Spread Function



Effective Area



Check out the maps + IRFs at
<http://fermi.skymaps.info/>

PSF Containment Angles

