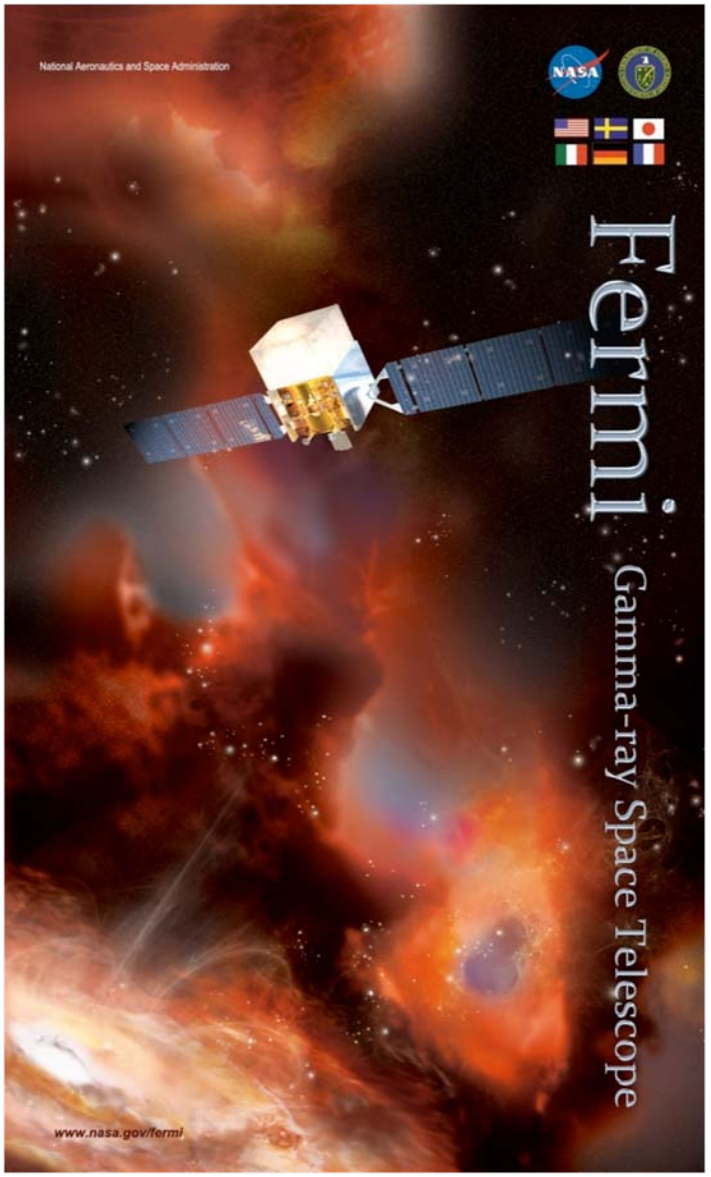

Fermi LAT Observation of the SNR W28

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On behalf of Fermi LAT collaboration

Sep 11, 2009

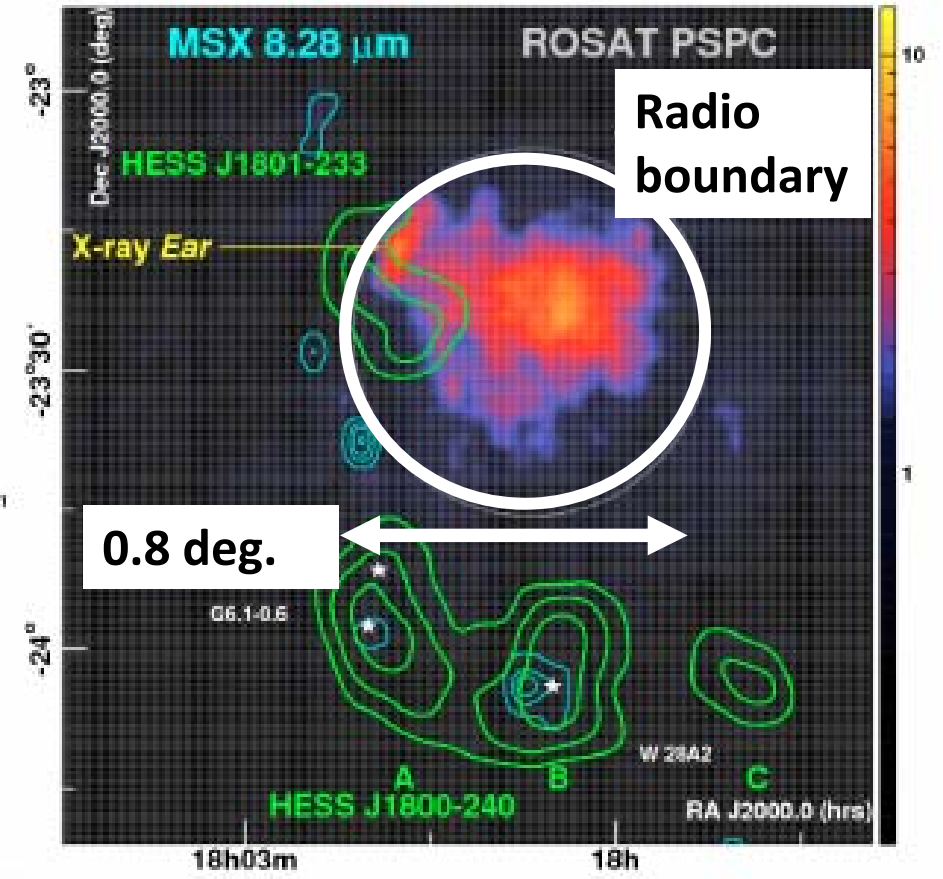
JPS meeting@Konan Univ.

Outline

- SNR W28
- Fermi LAT
- Analysis & Results
  - Source position & extension
- Summary

W28 (G6.4-1.0)

ROSAT X-ray images with
HESS TeV contors



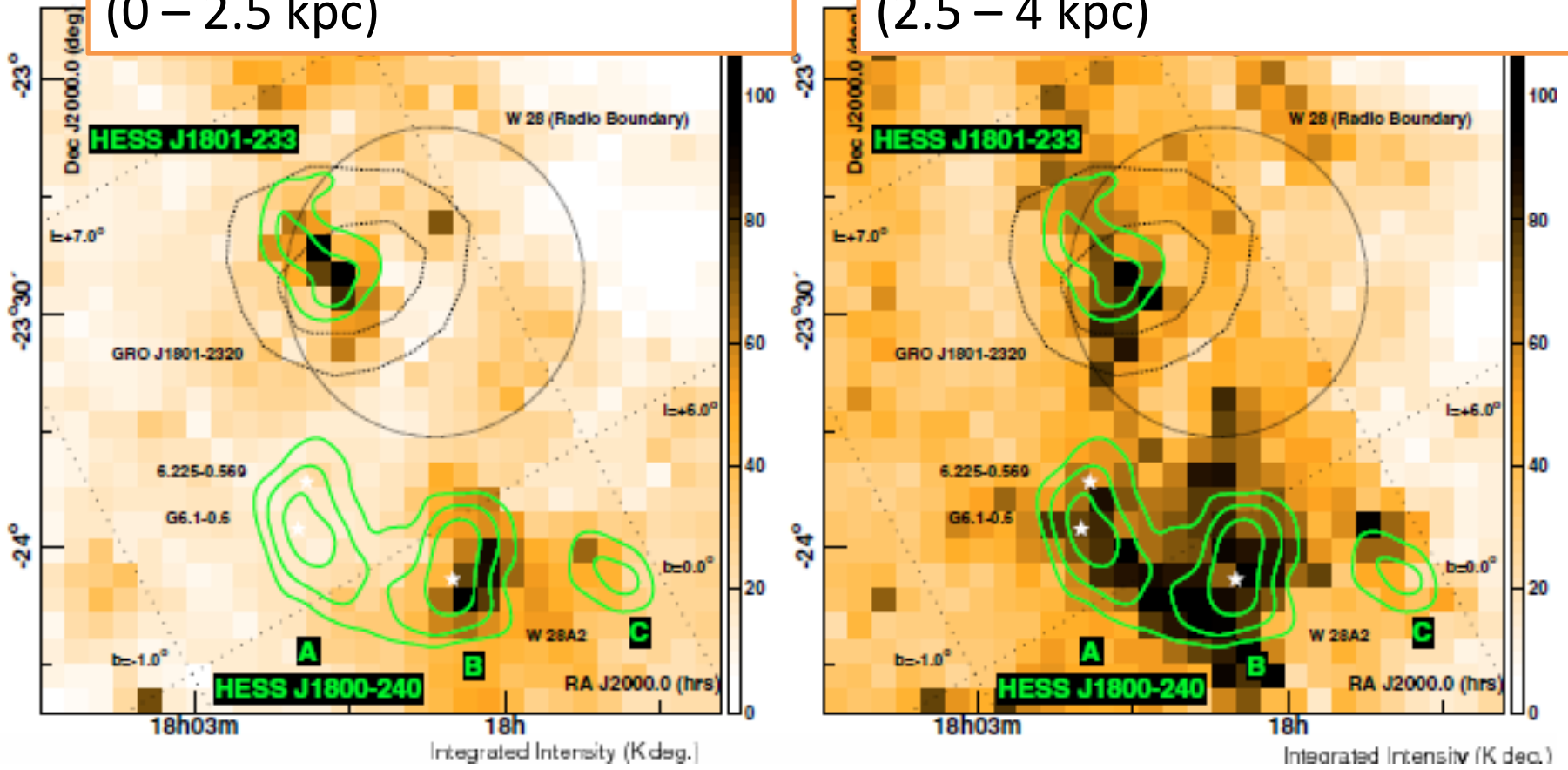
Aharonian et al. (2008)

- Mixed-morphology SNR
- TeV detected by HESS
- Distance 1.8-3.3kpc
- Old age ~35000-150000yr
- South TeV source is star forming region

MC association

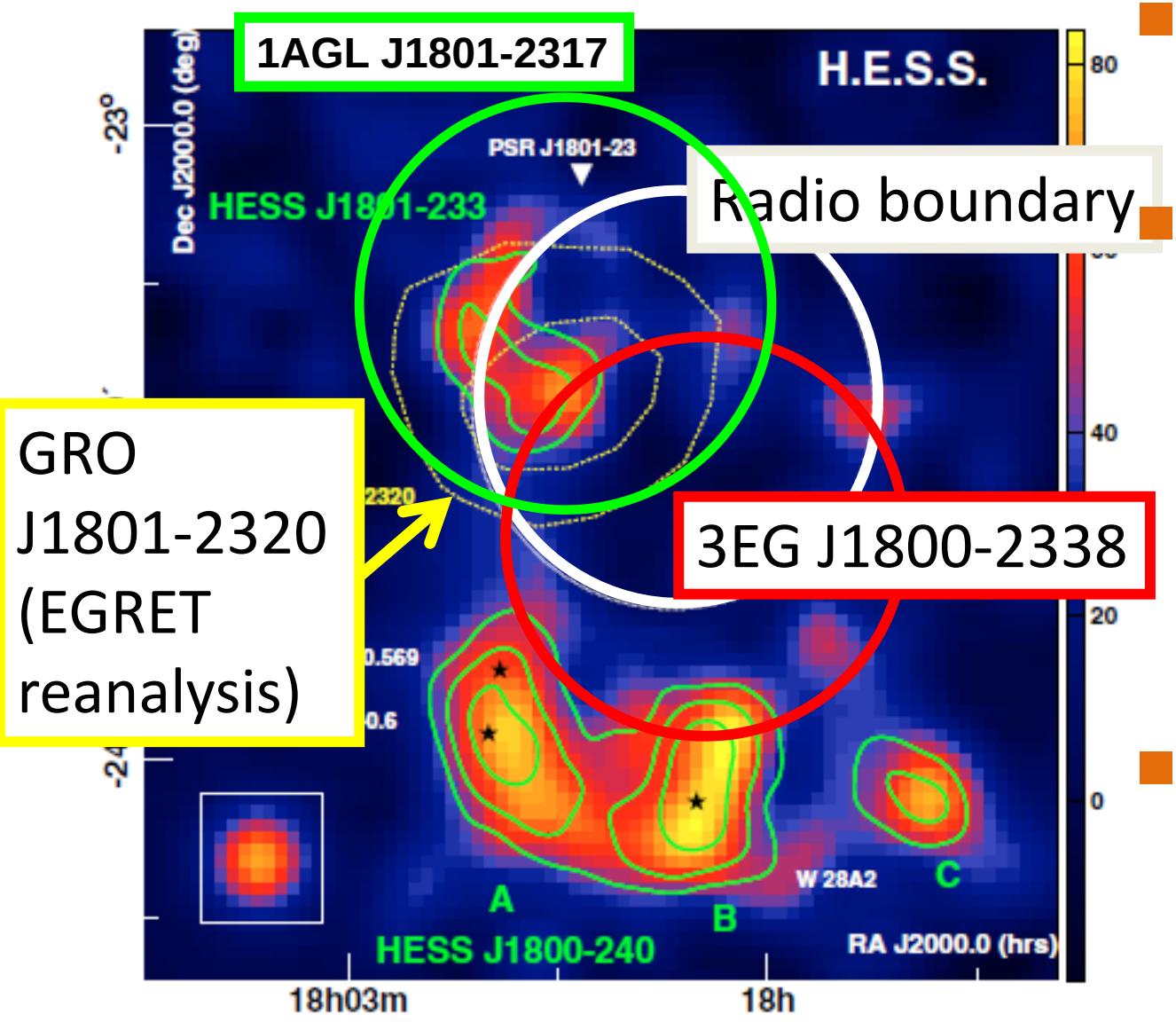
NANTEN 12CO(J=0-1) 0-10km (0 – 2.5 kpc)

NANTEN 12CO(J=0-1) 10-20km (2.5 – 4 kpc)



Most outstanding in the gamma-ray (HESS) – CO correlation among SNRs.

Association with EGRET, AGILE



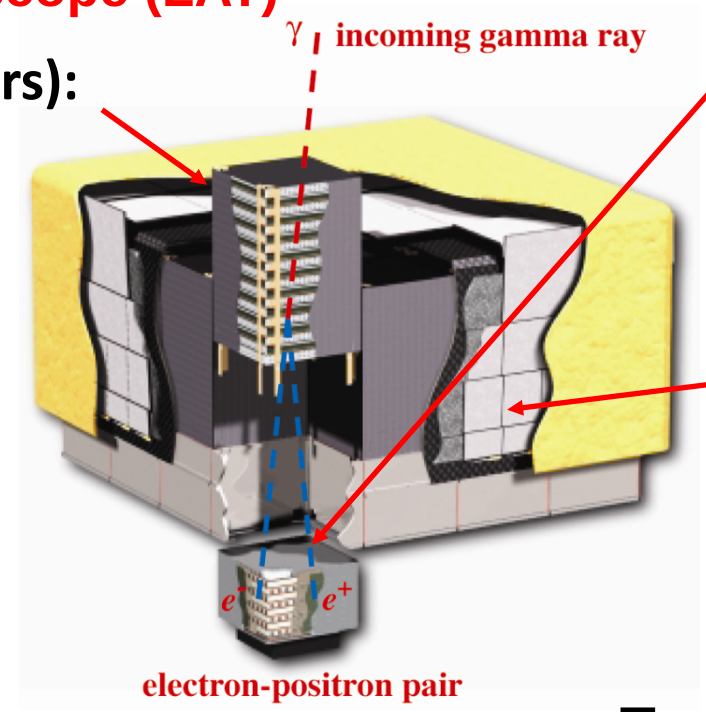
- **The position depends on the analysis**
- **Due to EGRET degree-scale PSF "We cannot rule out a relationship with HESS J1800-240" (Aharonian et al. 2008)**
- **Pointlike/extended are not determined.**

Fermi Gamma-ray Space Telescope

- International collaboration between US, Europe, and Japan
- Launched on June 11 2008 (its science data is public now)
- Consists of LAT and GBM

Large Area Telescope (LAT)

Tracker (16 towers):
- Pair conversion telescope
  → Tungsten conversion foils
- Measures e^-/e^+ track



Calorimeter:
- 1536 CsI crystals
- Measures photon energy

Anti-coincidence detector:
- Segmented
- Vetos CR background

- Large Eff. Area & 2.4 sr FoV
- ~20 MeV < E < ~300 GeV

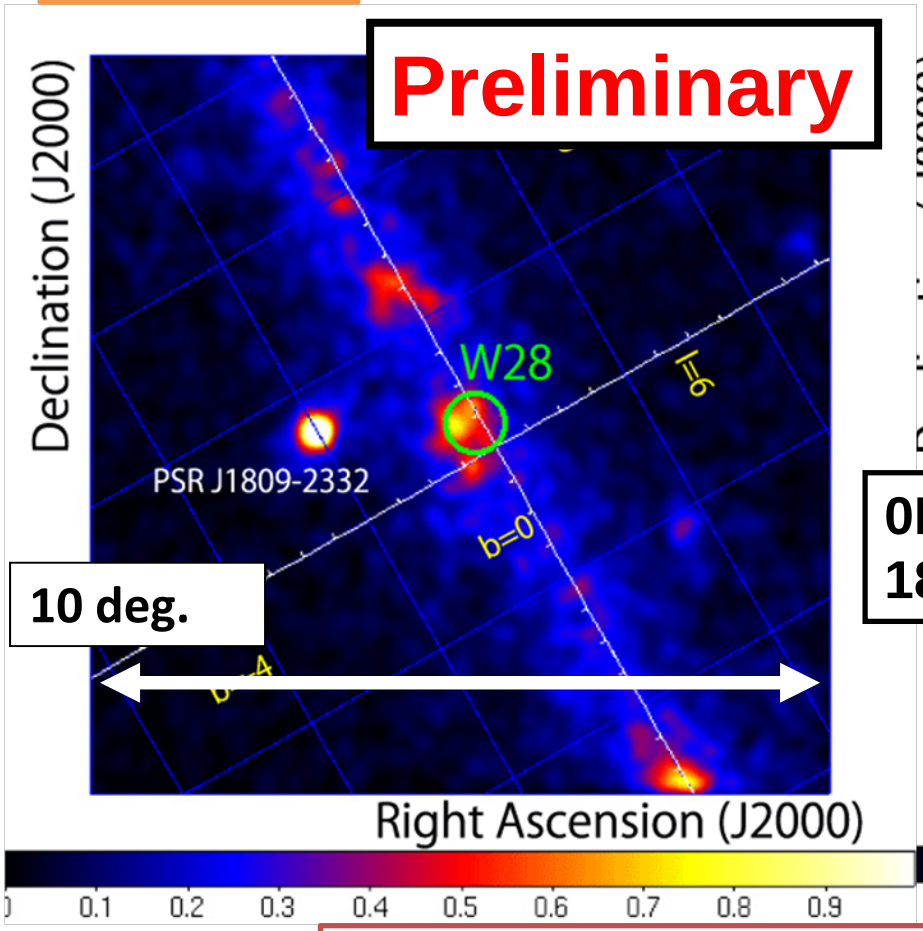
Emission mechanism
&
Source extension

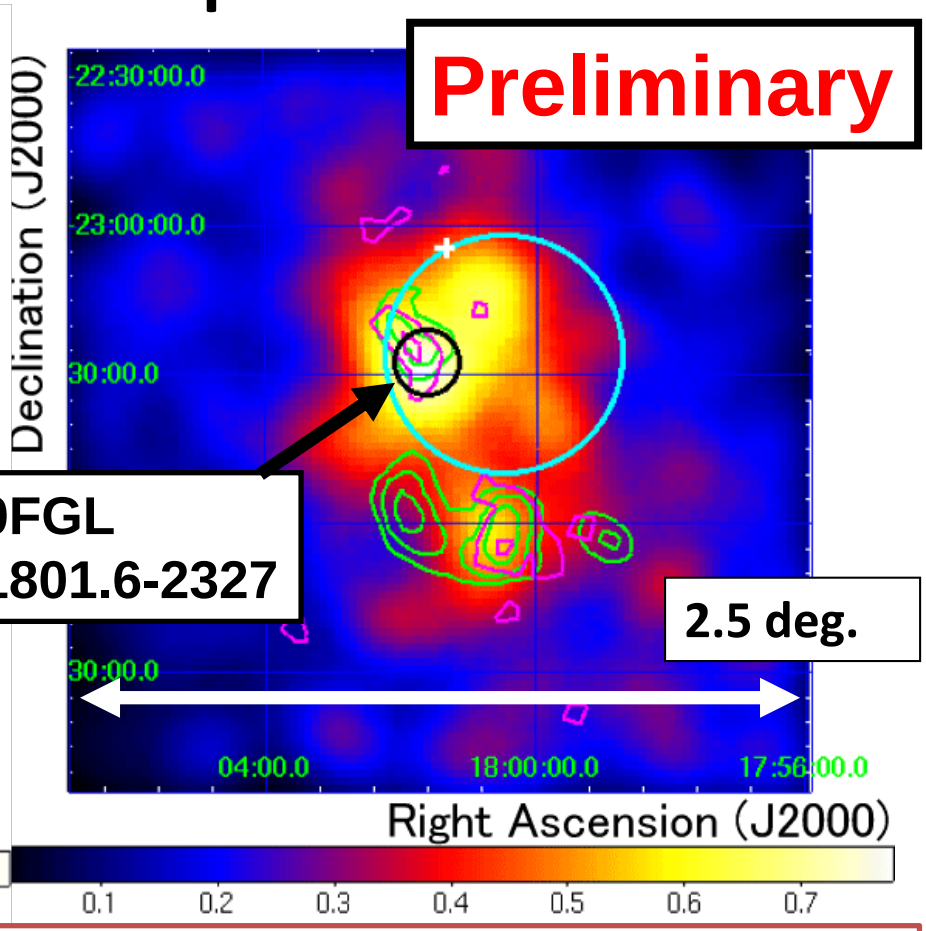
Data set & pre-selection

- Dataset ~11months survey mode data from Aug 4, 2008 to July 4, 2009
- Science Tools v9r15
- Pre-selection
  - Zenith cut < 105deg., “diffuse” class

2-10GeV

Count maps



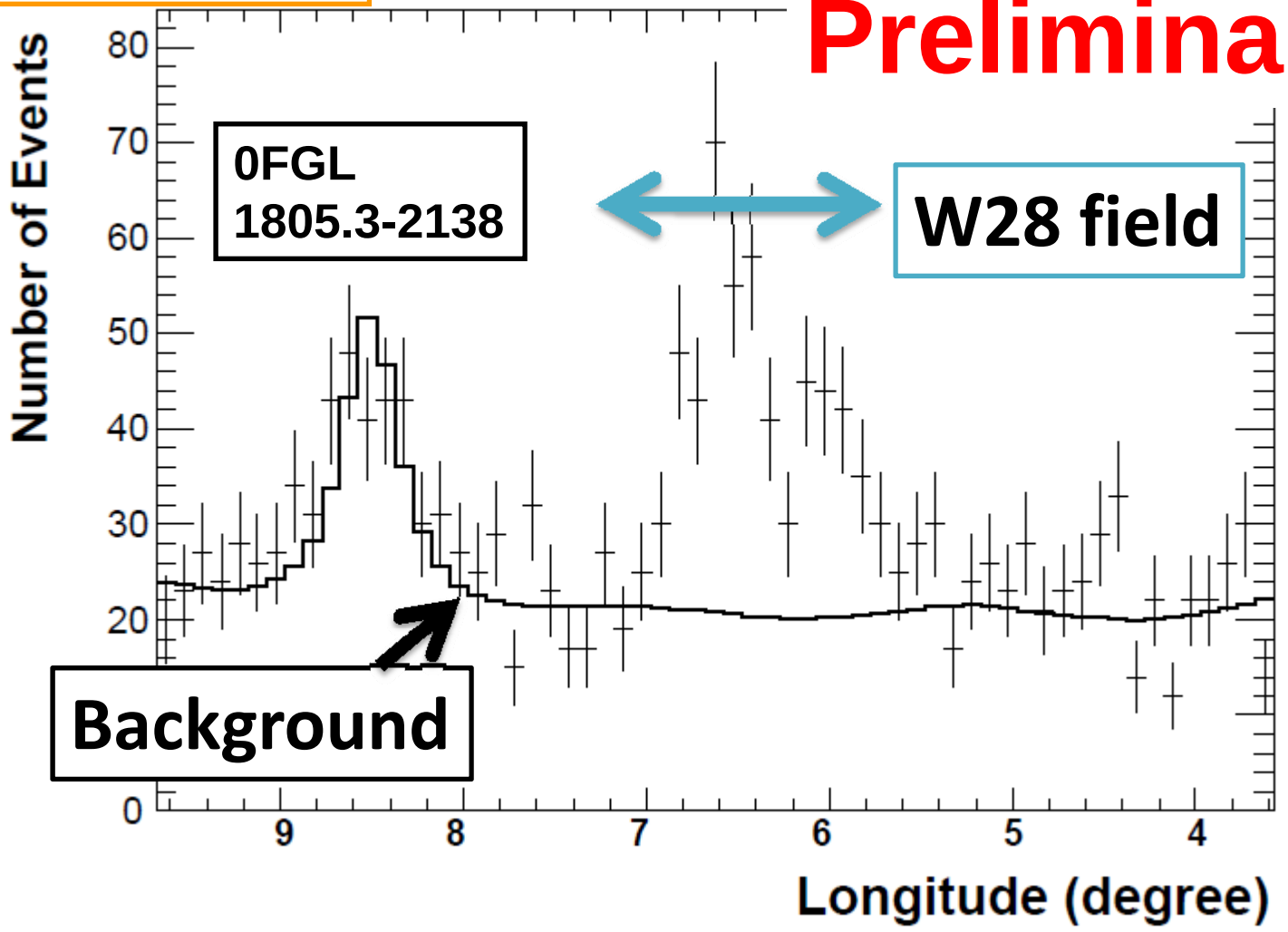


- Green contours: TeV significance 4,5,6 sigma
- Magenta contours: NANTEN (CO J=1-0) v=0-10km/s
- Mosaic: FERMI(1pixel=0.025deg. Smoothing Gaussian kernel=0.2deg.)
- Cross: PSR J1801-23
- Black circles : Bright source catalog 95% confidence region (Abdo et al. 2009)

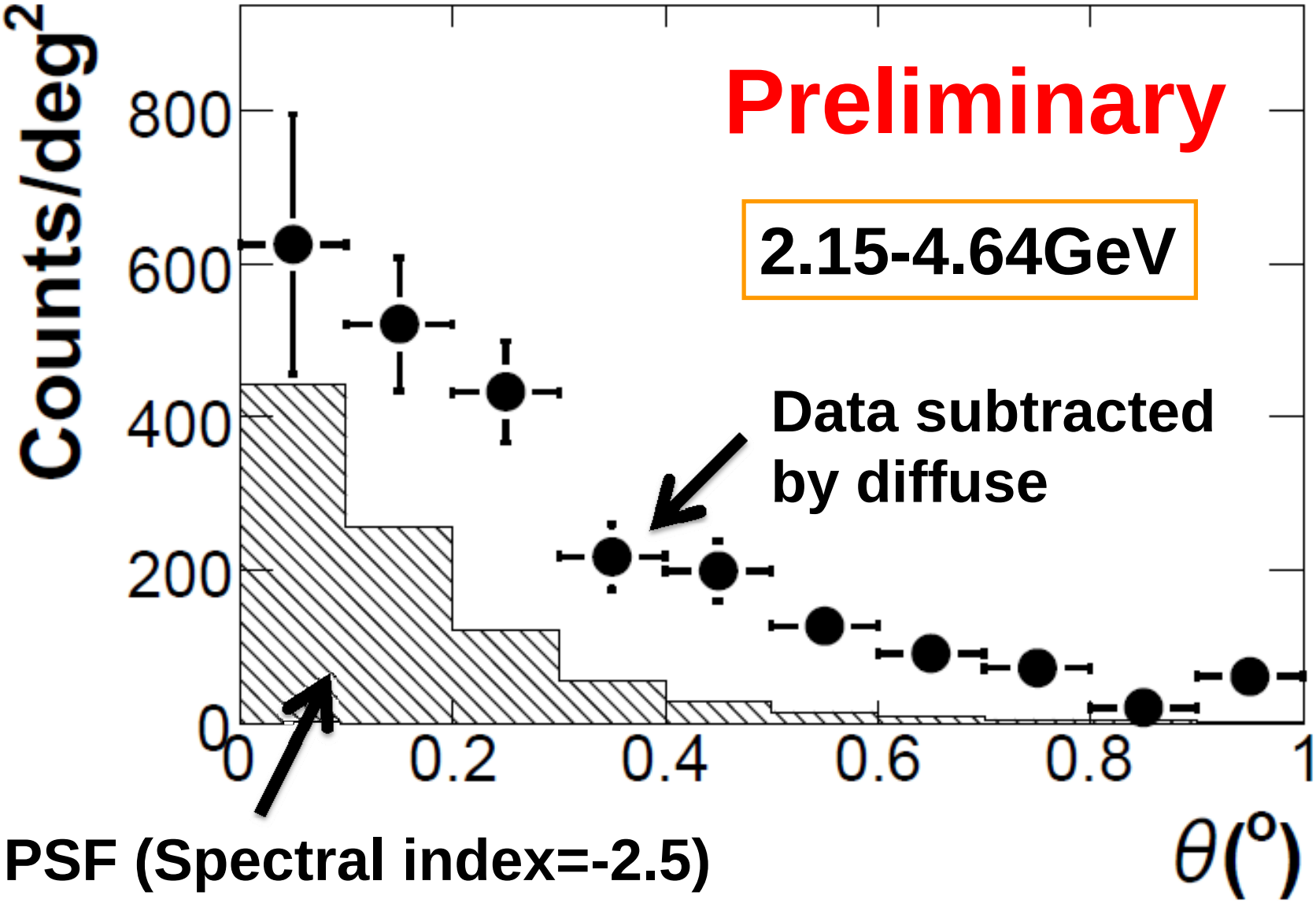
Projection

2.15-4.64GeV

Preliminary



Radial profile



Energy Spectrum

NO DATA

Please wait for the refereed paper!

Summary

- Fermi-LAT detected gamma-ray emission spatially coincident with the northeast boundary of the SNR W28
- The gamma-ray emission is spatially extended.
- Detailed spectral study as well as source extension study are underway.
- All the detailed results will be reported in the upcoming refereed paper.

Fermi special session is held tomorrow !