

Morphologies and SEDs of HE Sources Revealed by LHAASO

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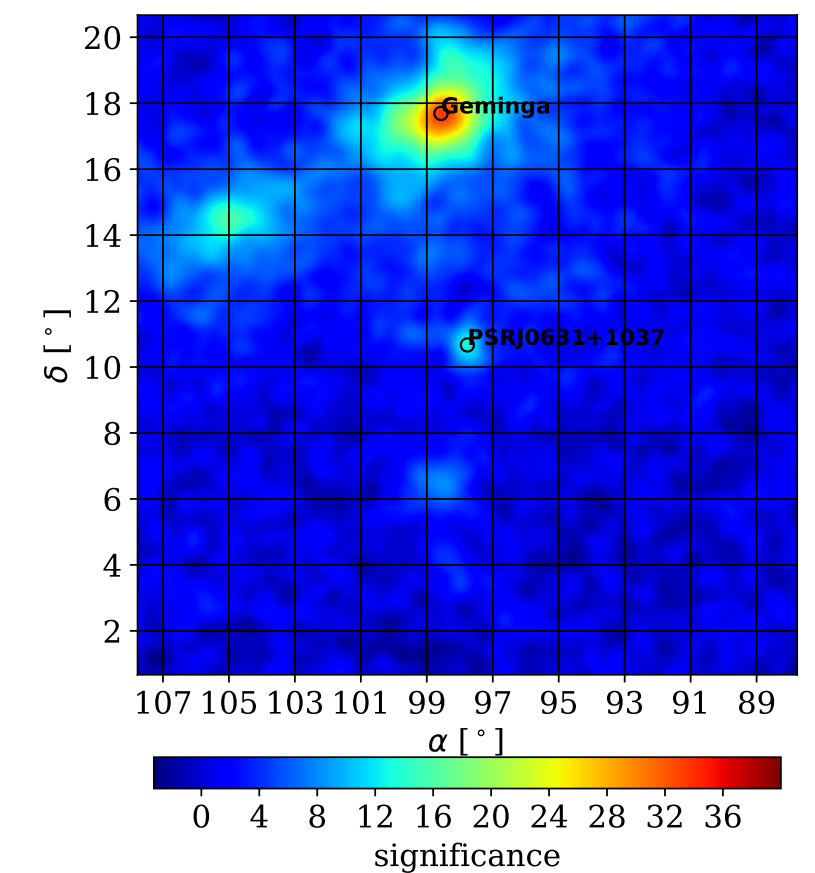
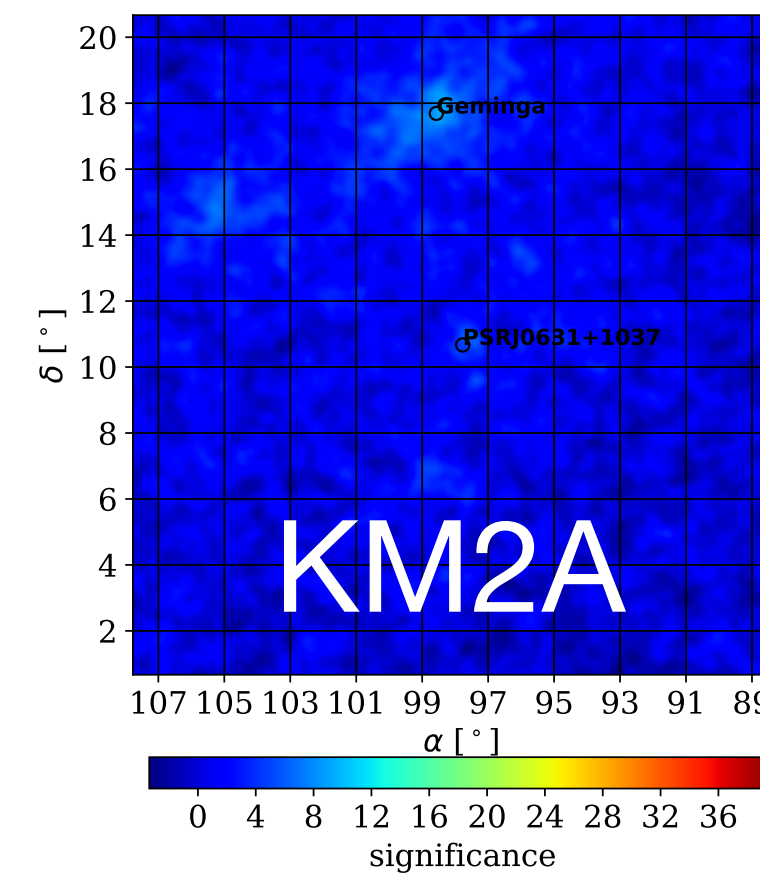
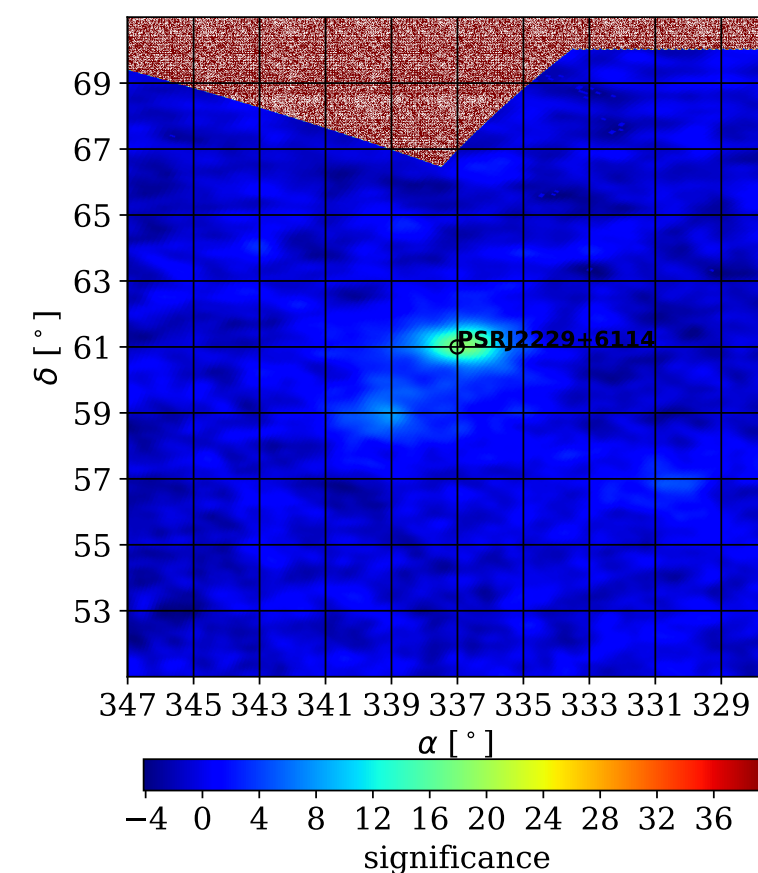
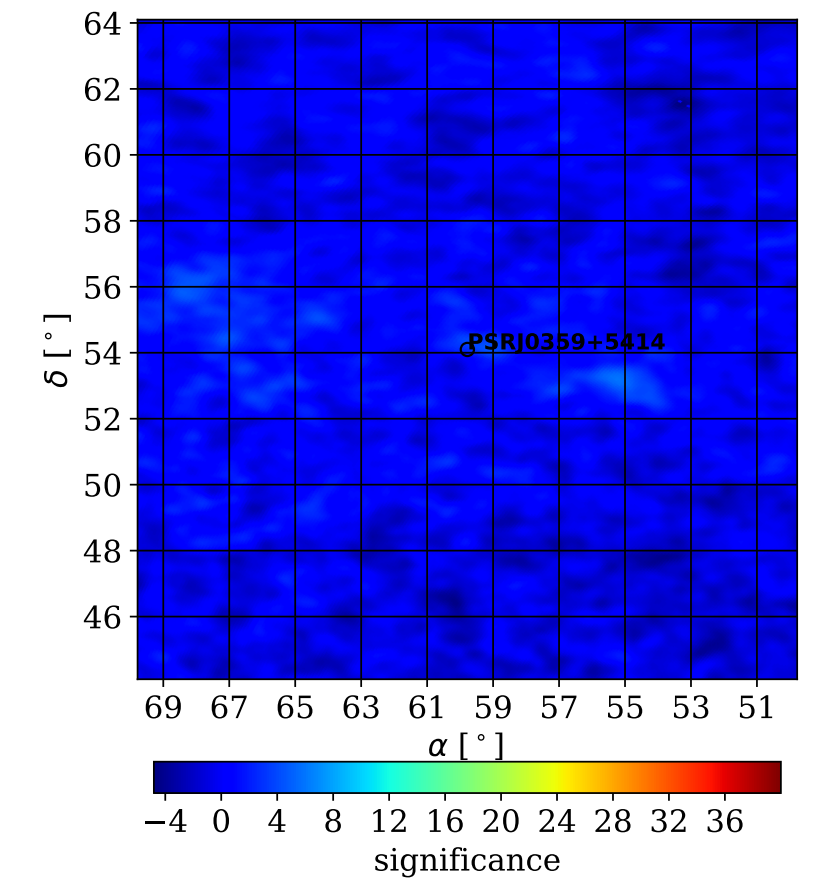
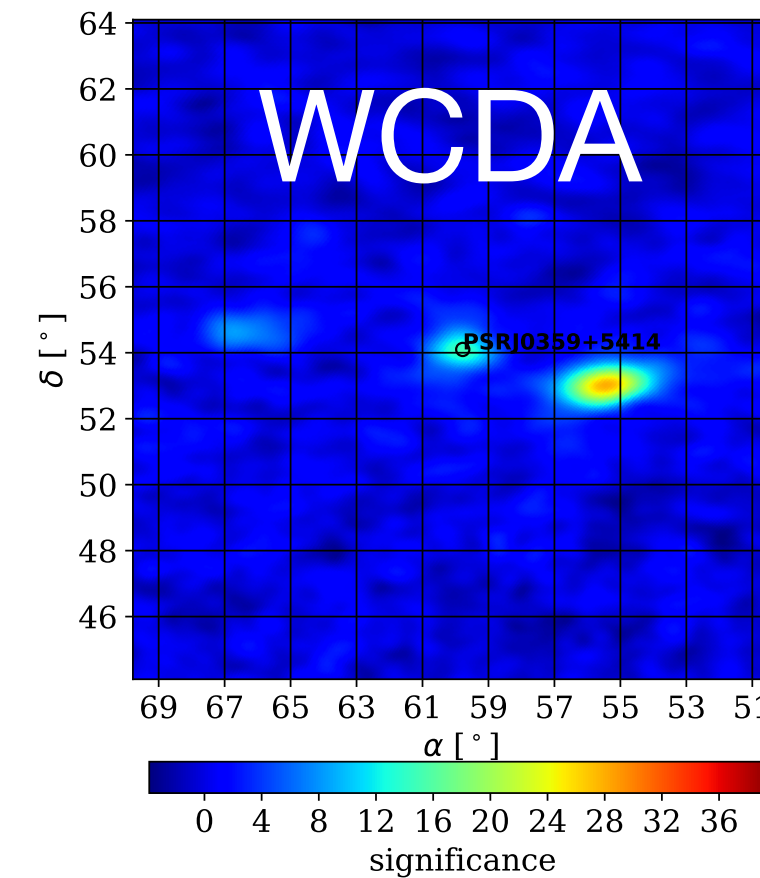
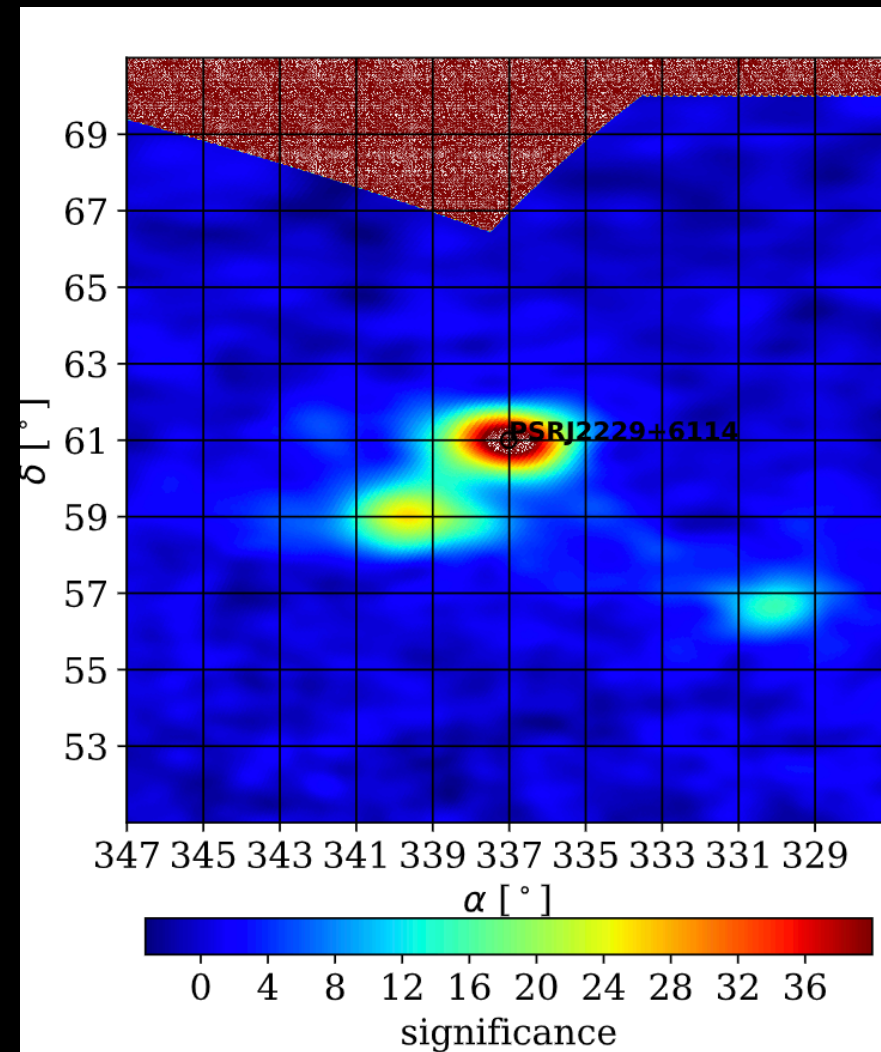
Advisor: Gwenael Giacinti & Hao Zhou (TDLI)

LHAASO Observations

Extended
Point-like

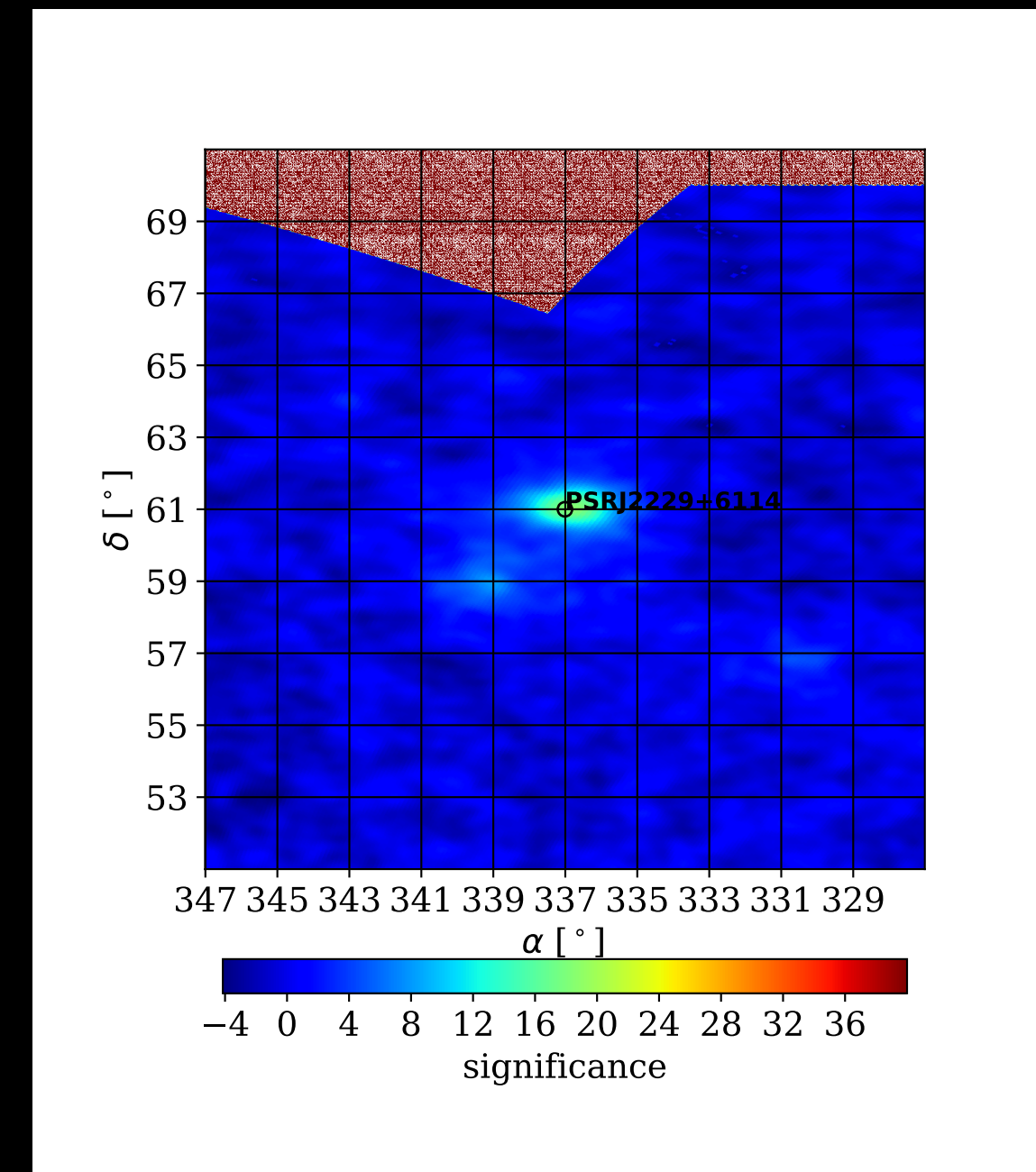
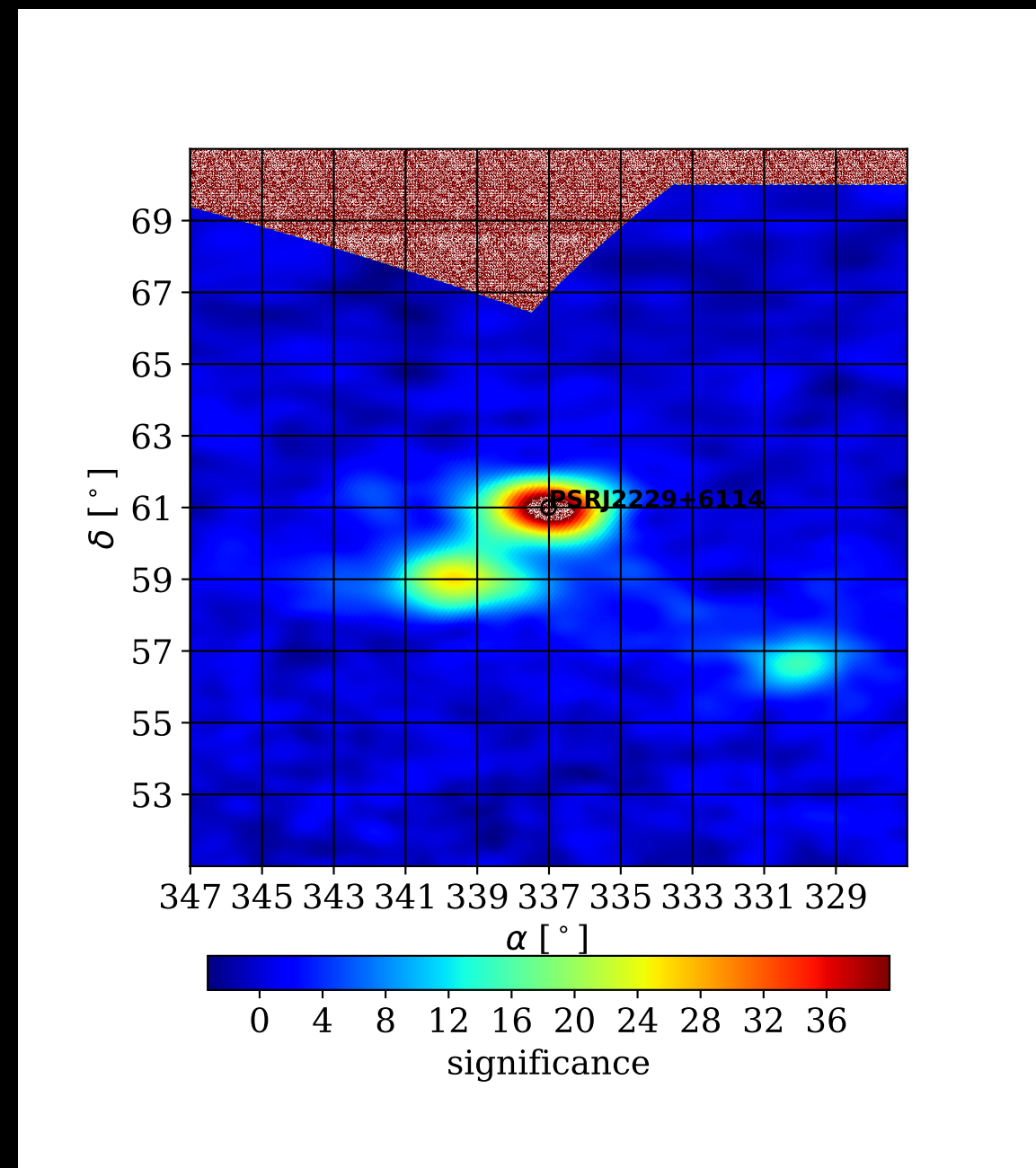
Blended

- What is the basic strategy to find the best fit?
- For different sources:
- their intrinsic spectrum will differ
- Their morphology will differ



Modeling HE Sources

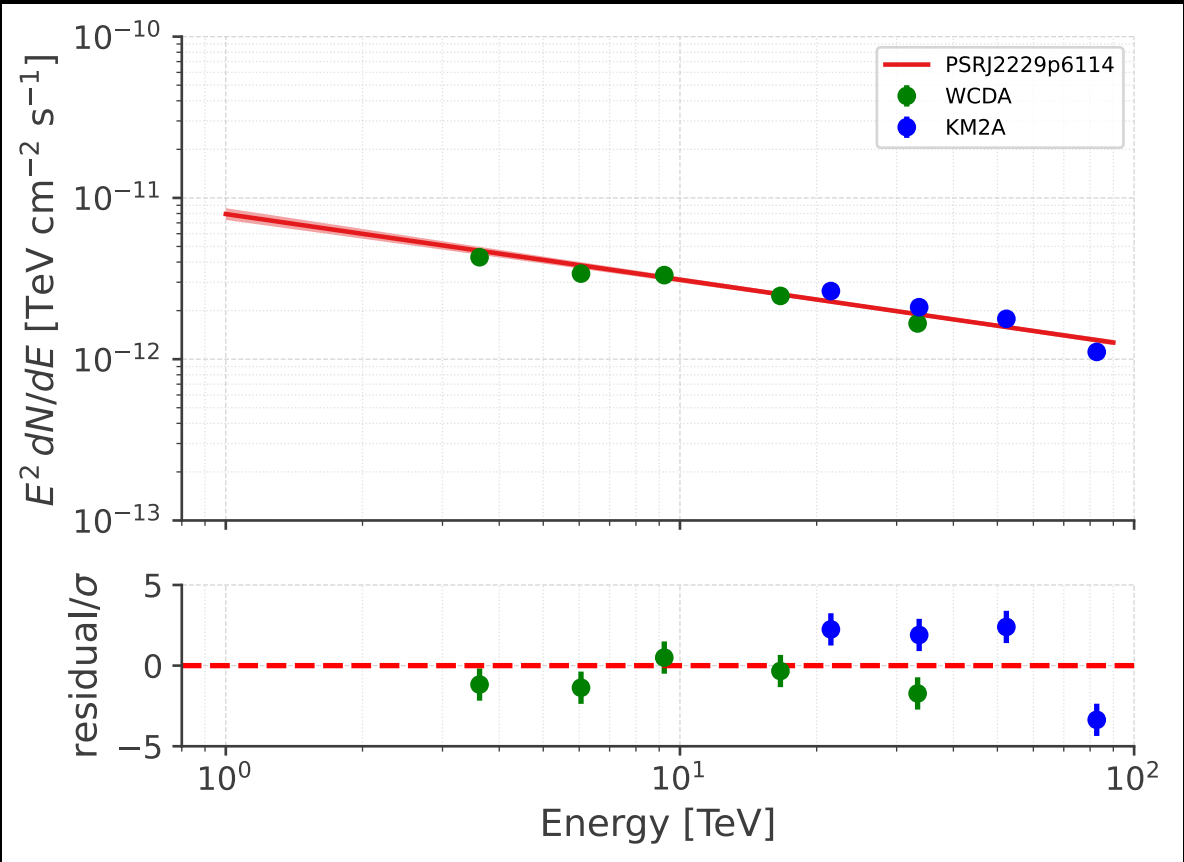
- 2-D Morphology: Disk Morphology, Gaussian Morphology
- Spectral Type: Power Law, Cutoff Power Law and Log Parabola



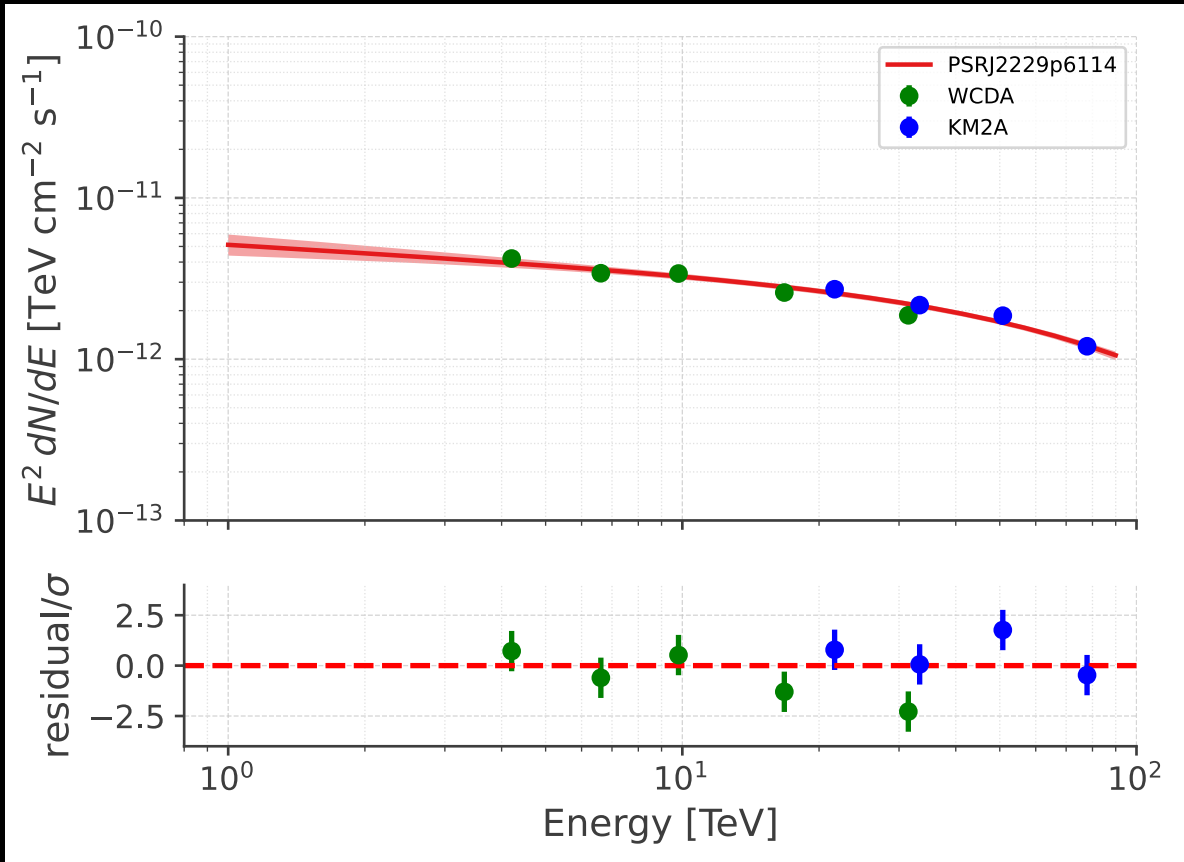
PSRJ2229+6114

How to best model the HE sources?

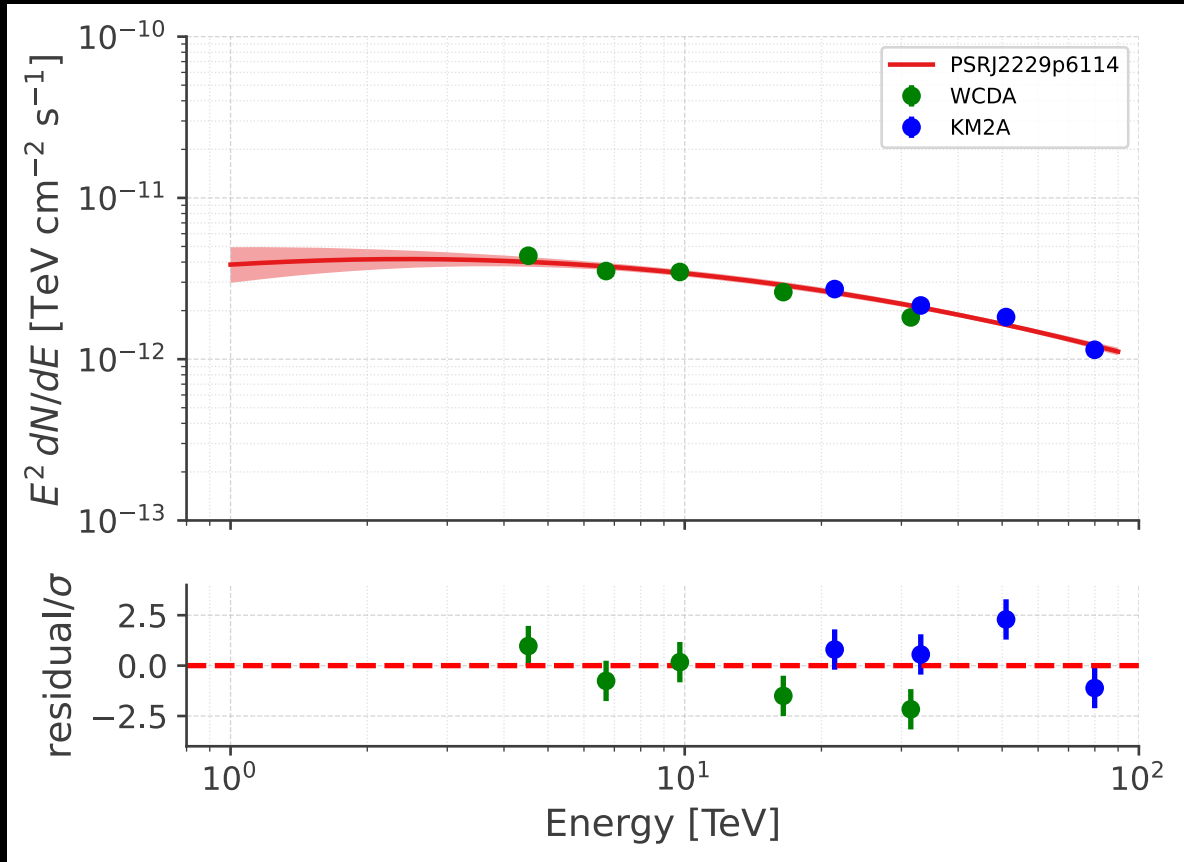
How Spectral Type Influence Flux Measurement



Power Law
TS=1062.63, 2717.03

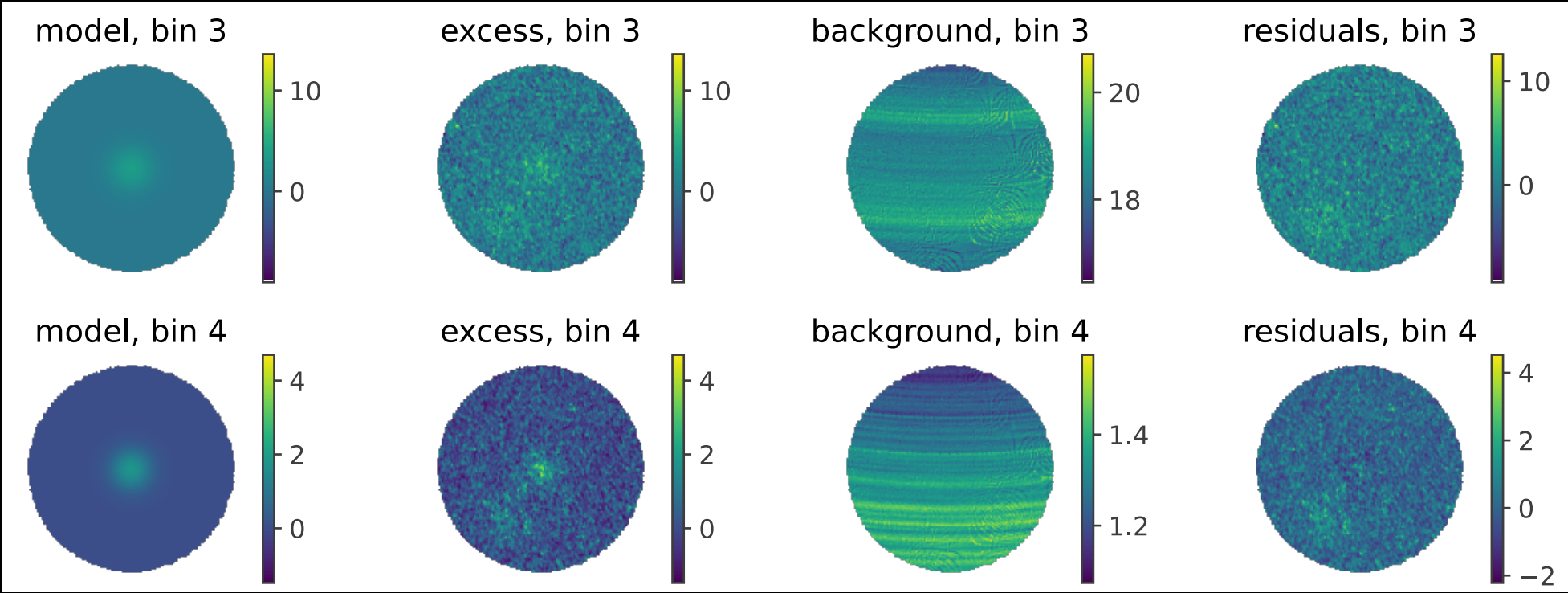
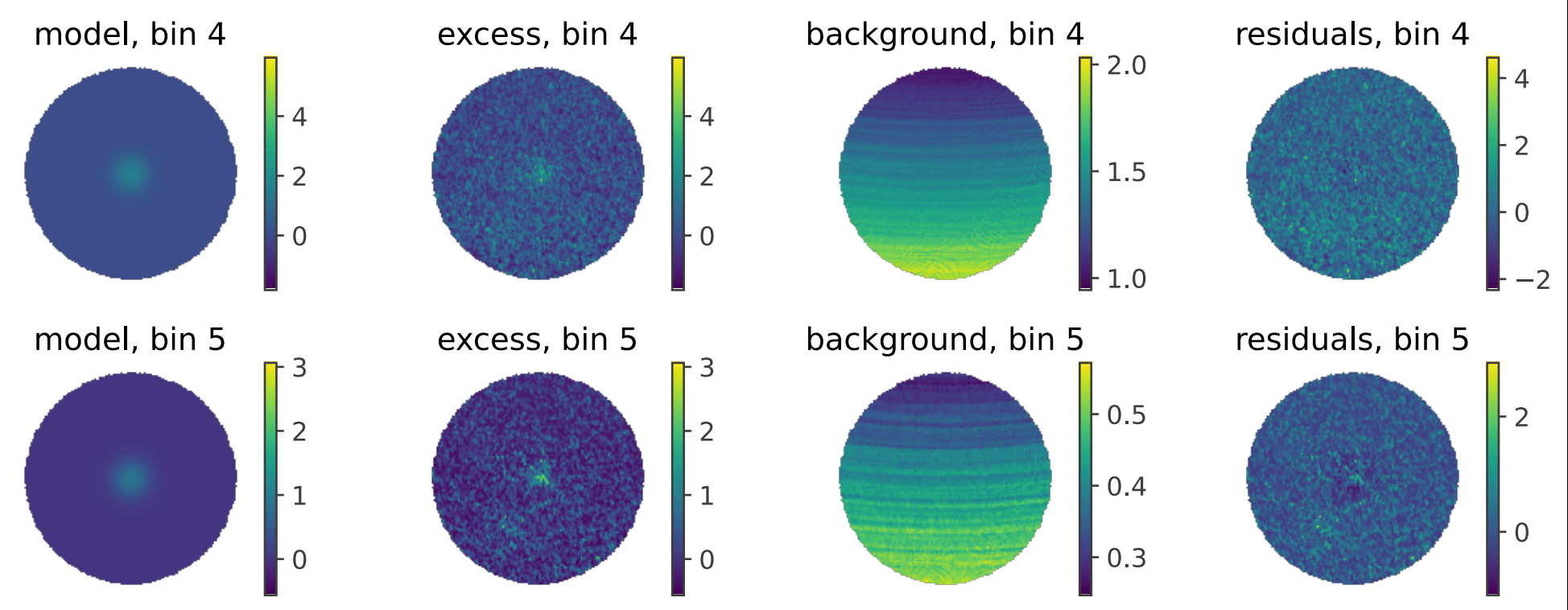


Cutoff Power Law
TS=1061.68, 2736.67

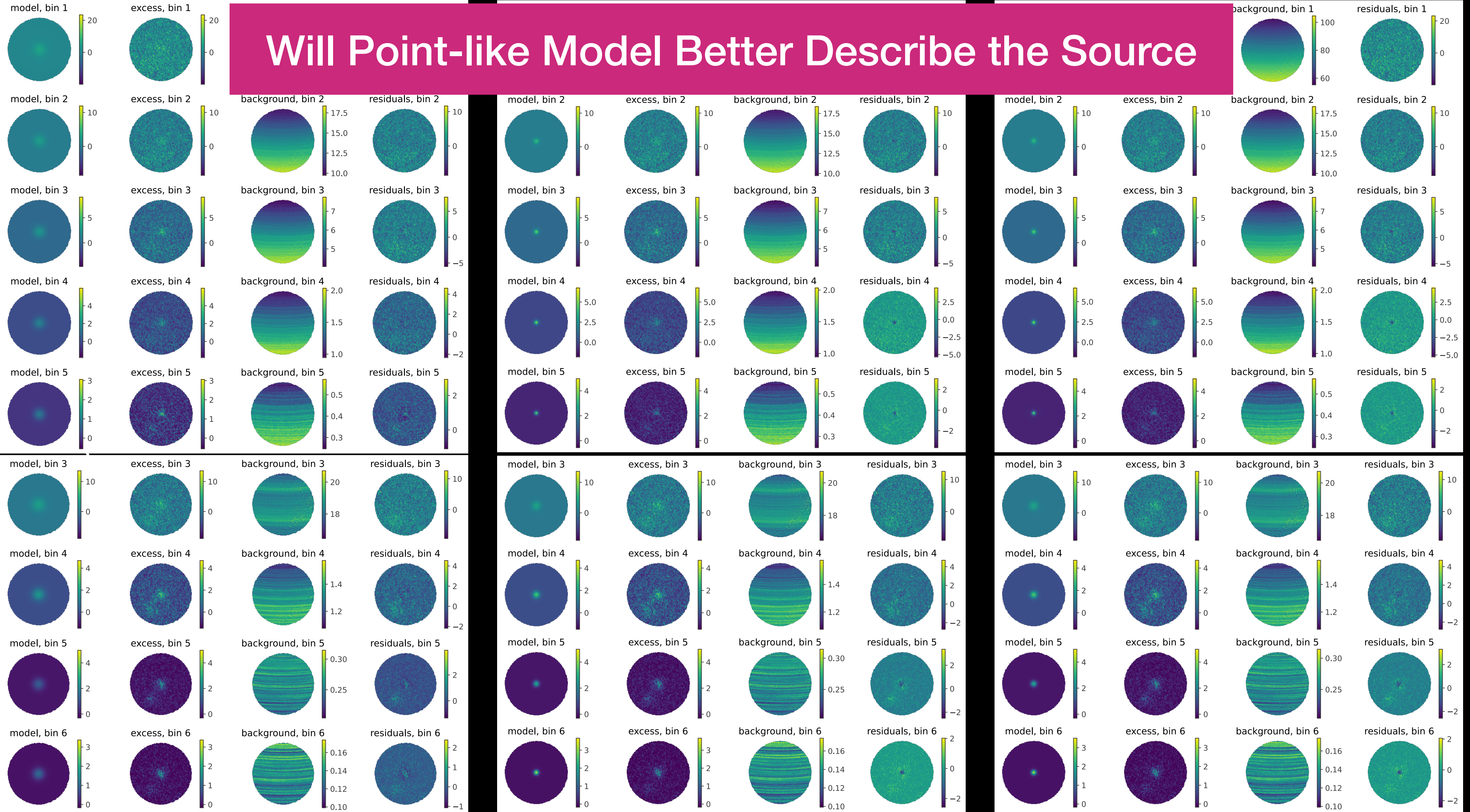


Log Parabola
TS=1060.55, 2734.26

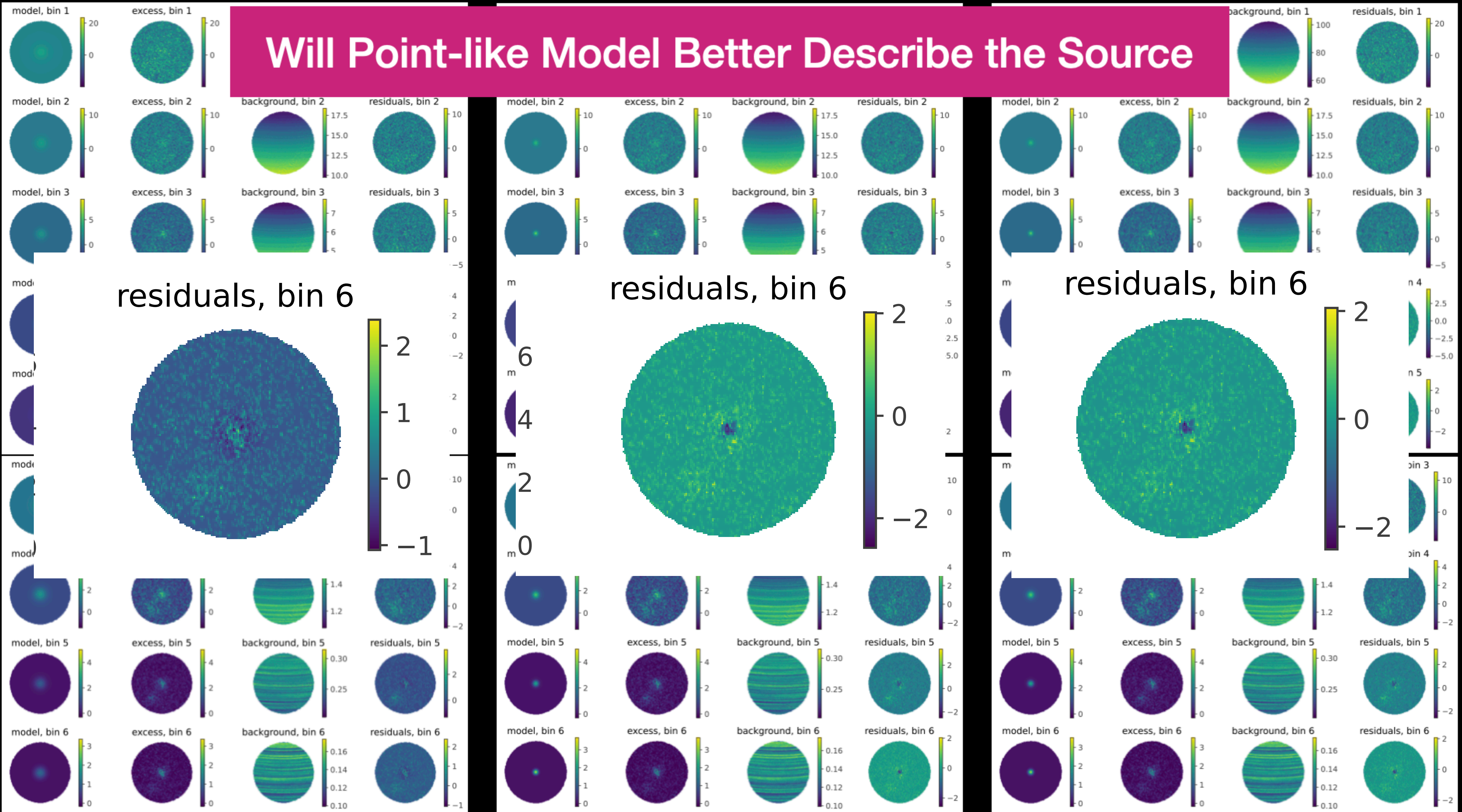
Are they good enough to model the source?



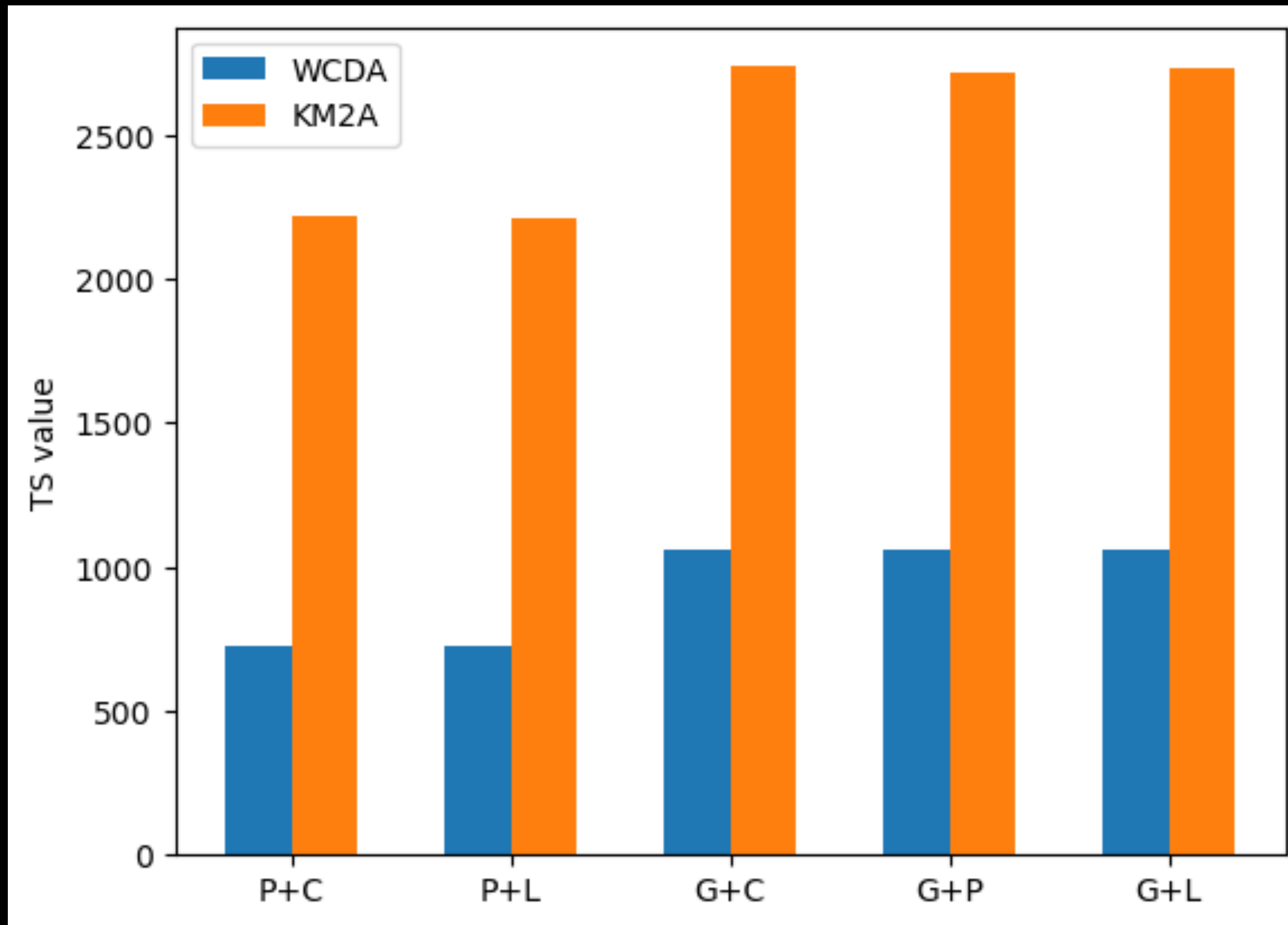
Will Point-like Model Better Describe the Source



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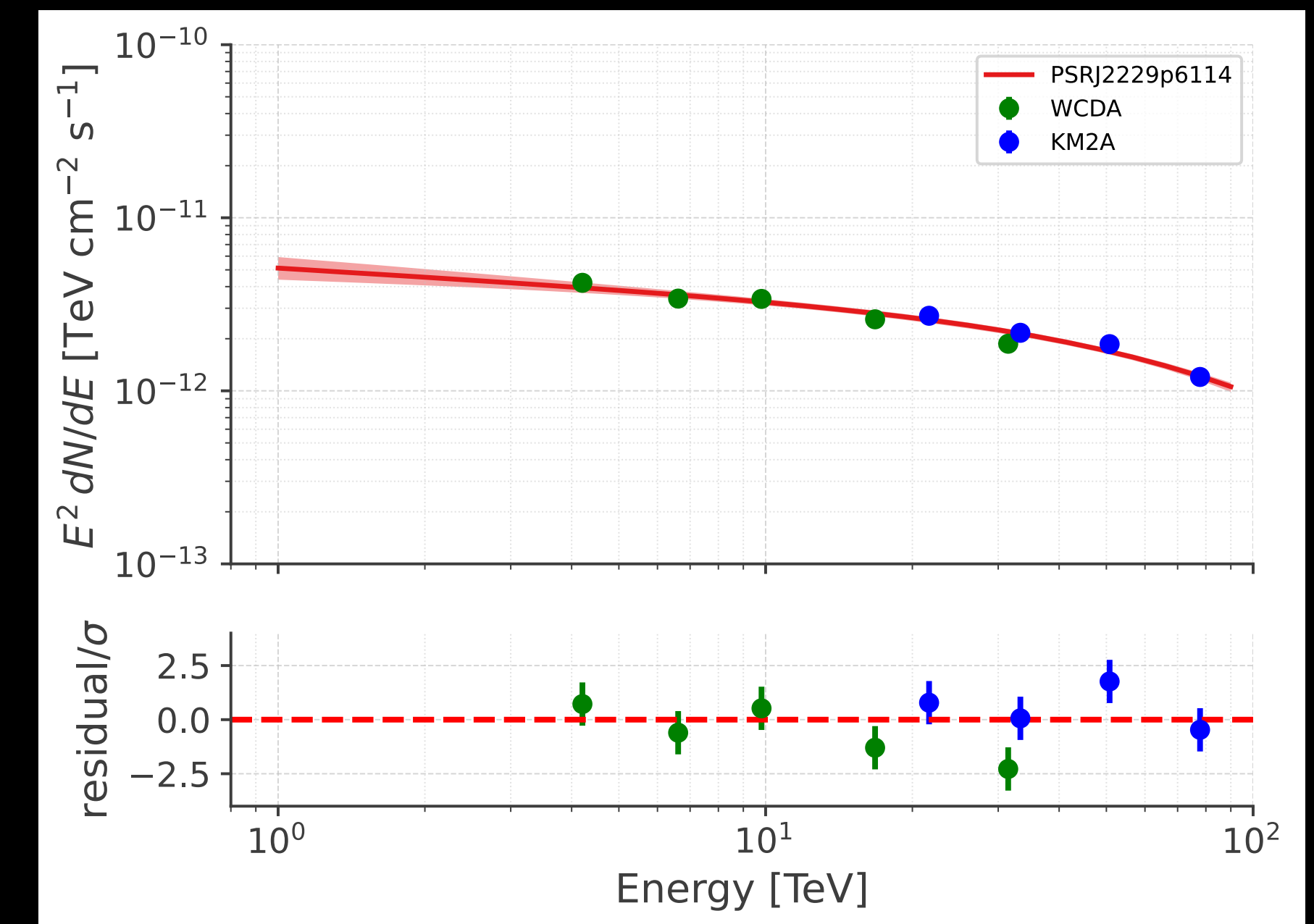


Best Fit Model



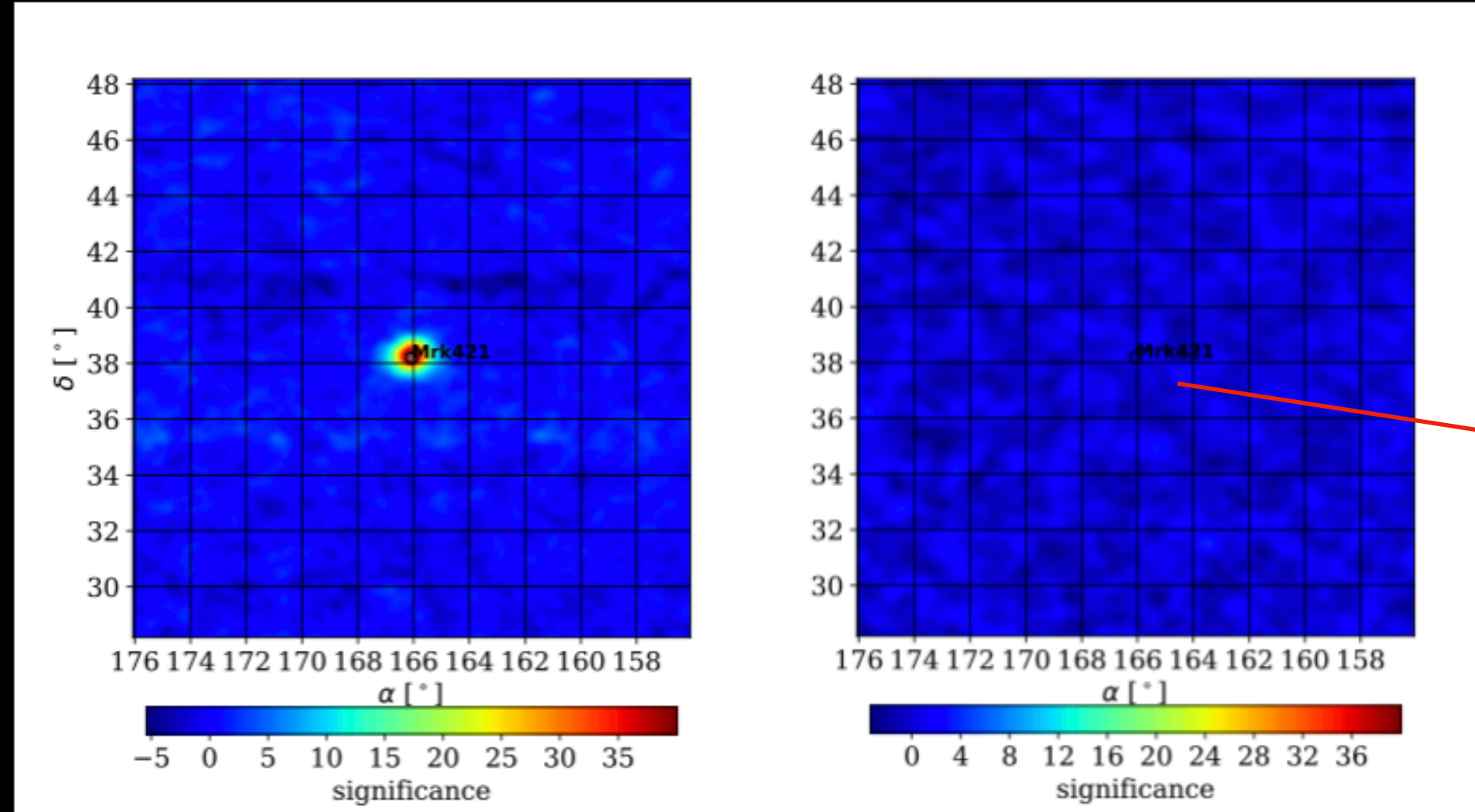
TS values of different model configurations

G+C gives largest TS values



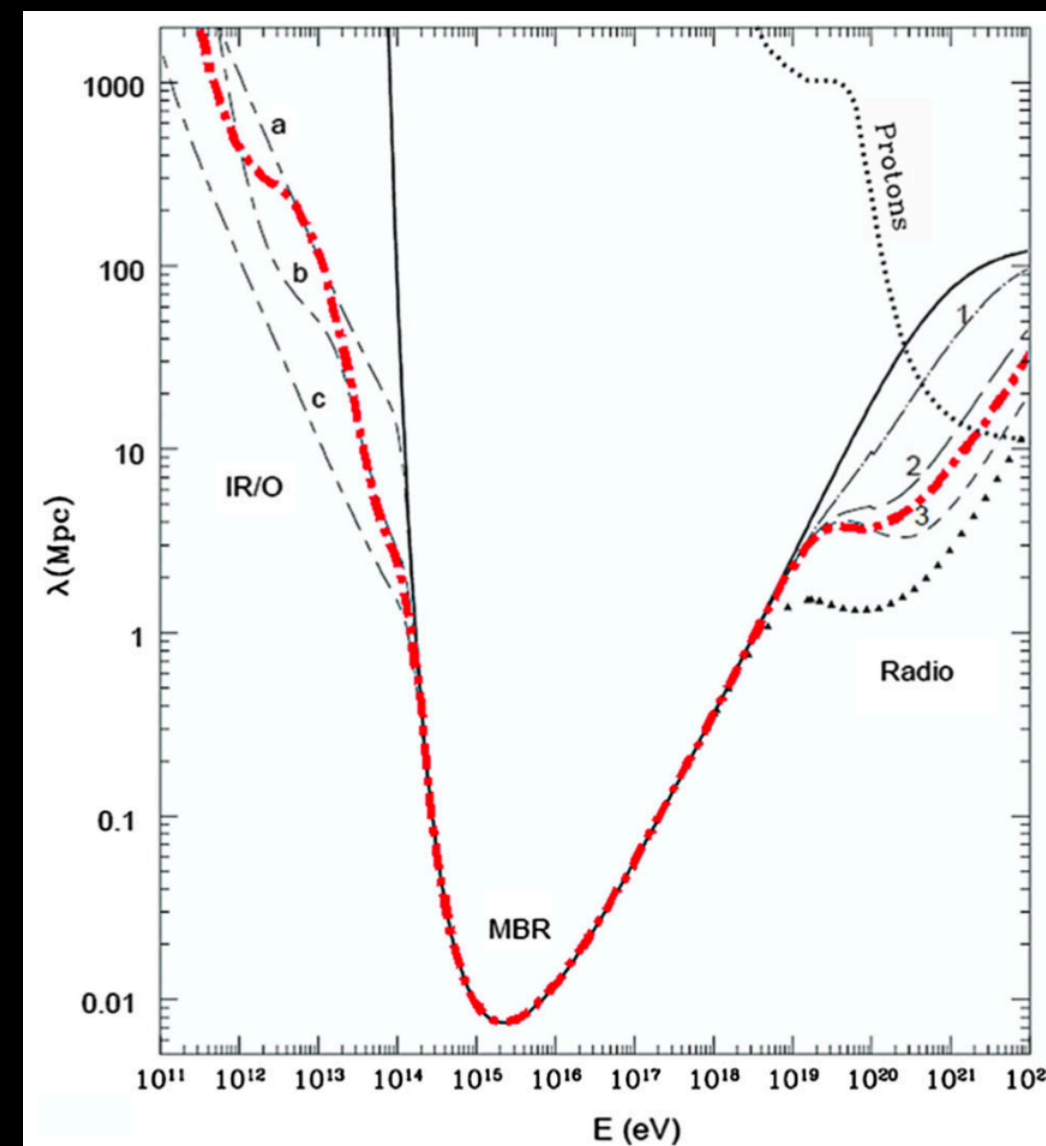
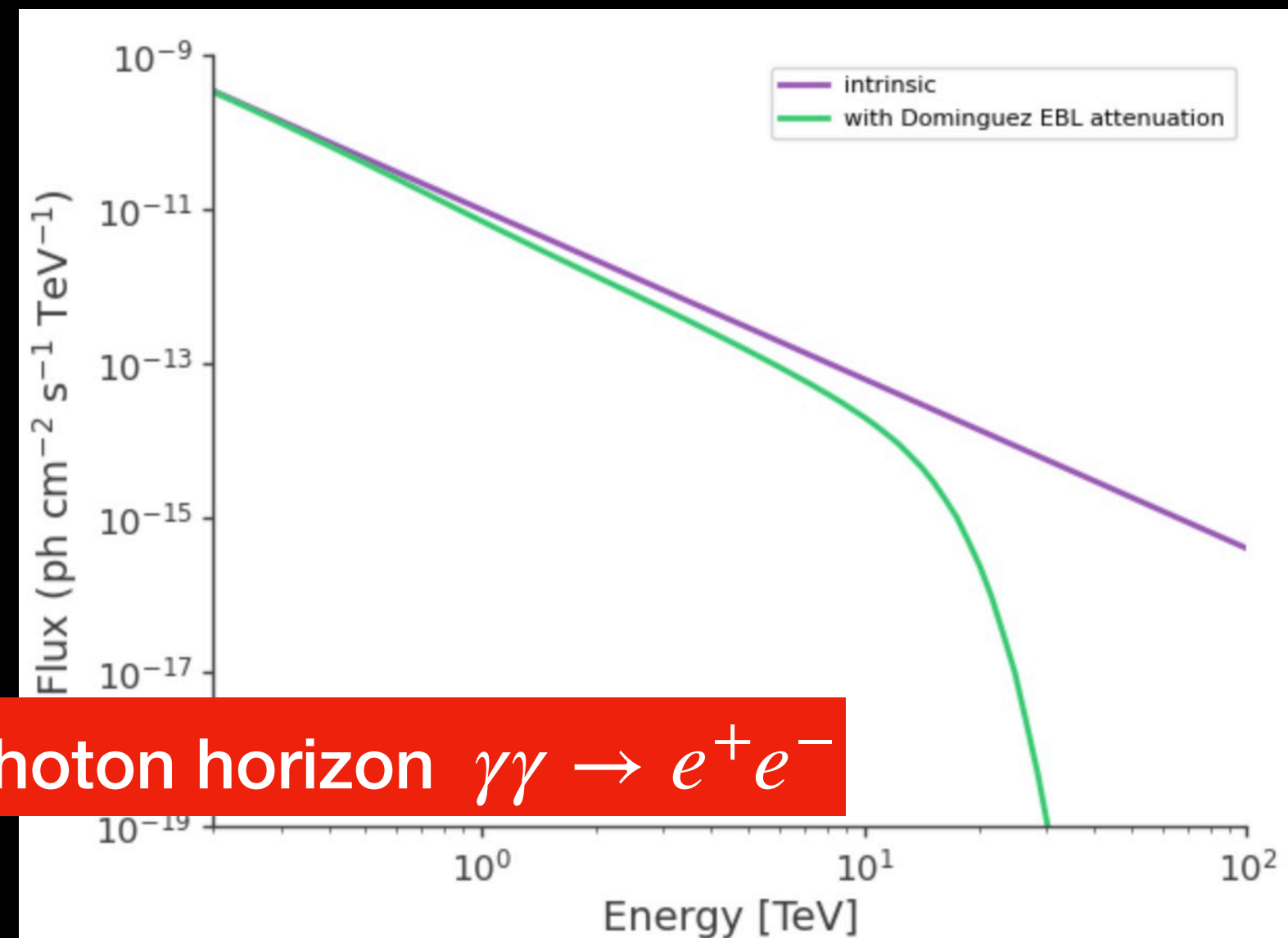
Cutoff Power Law
TS=1061.68, 2736.67

AGN Energy Spectrum

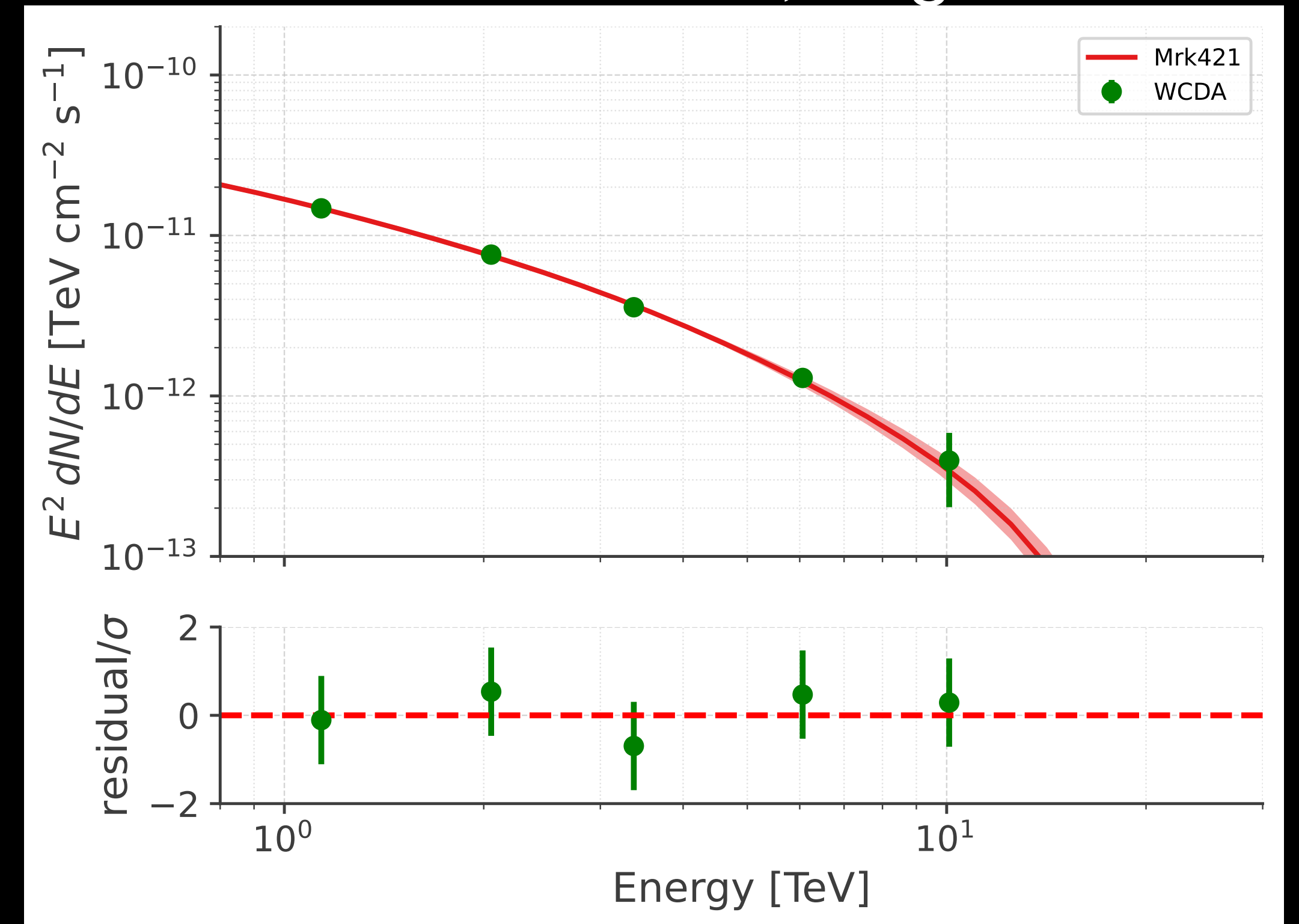


Non-Detection
in KM2A

Significance Map of Mrk421, BL Lac, $z=0.031$



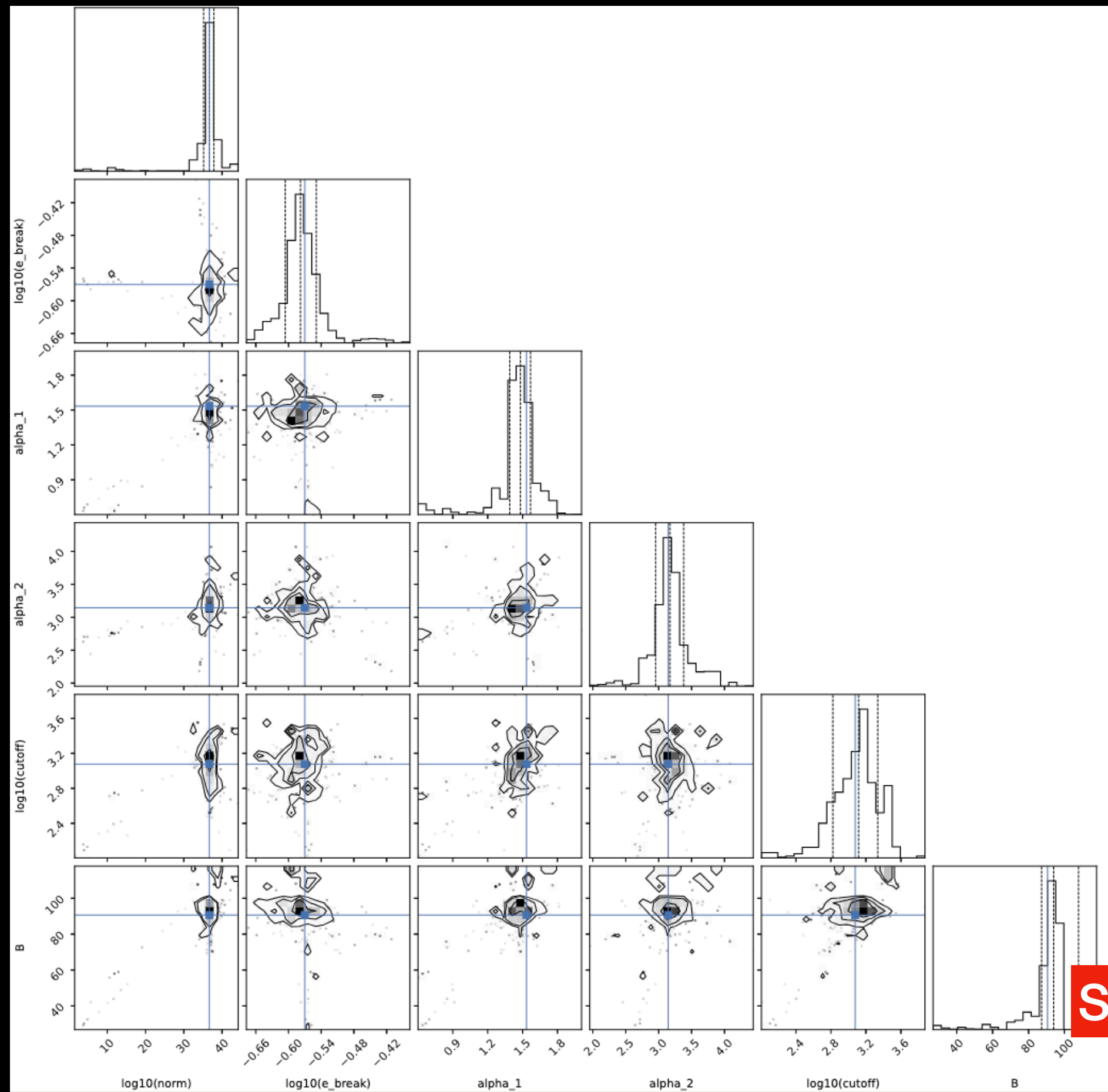
Point-like, Log Parabola



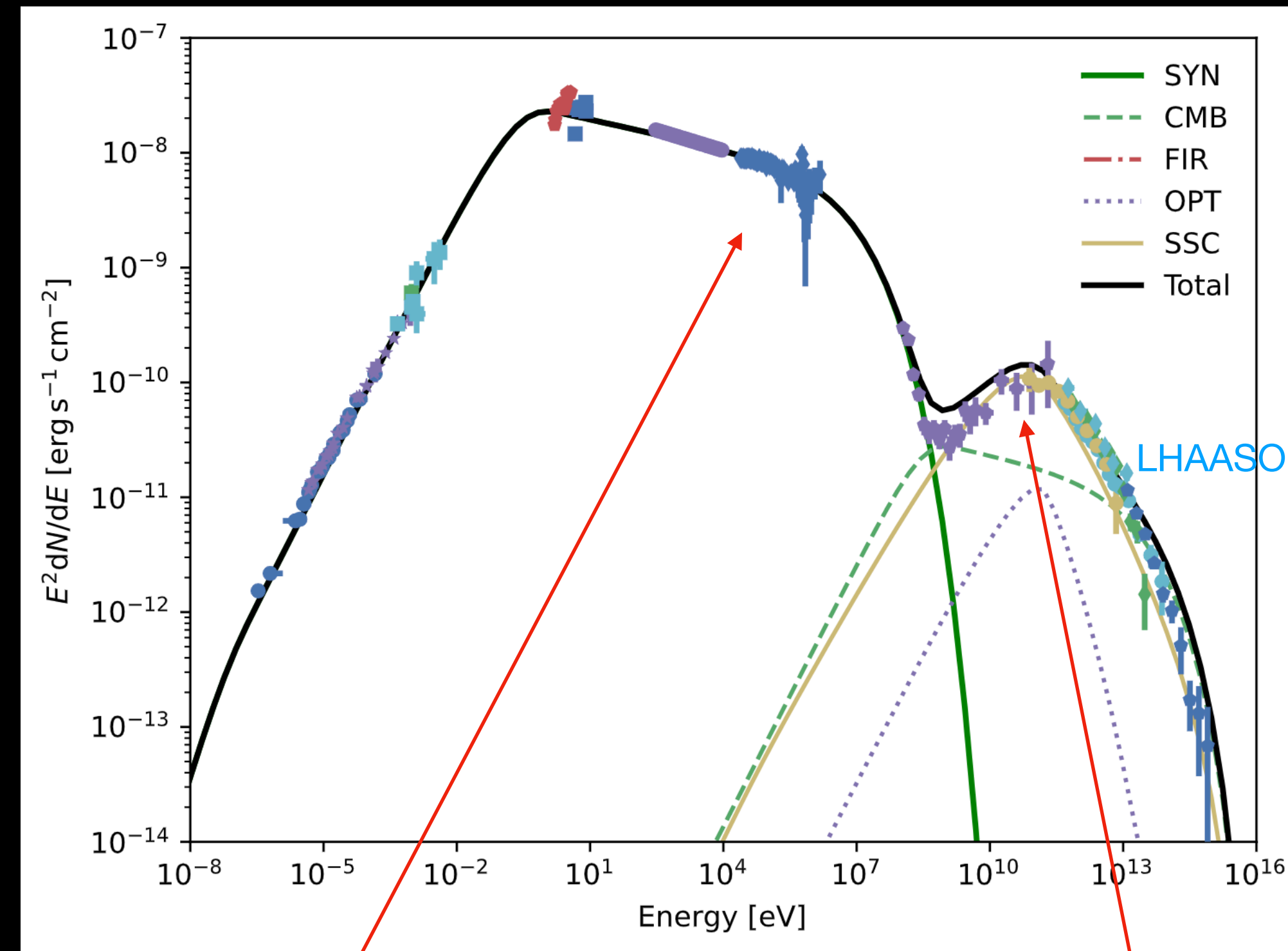
TS=5280.8

Photon horizon $\gamma\gamma \rightarrow e^+e^-$

SED Fitting For Crab Nebula



MCMC Corner Plot



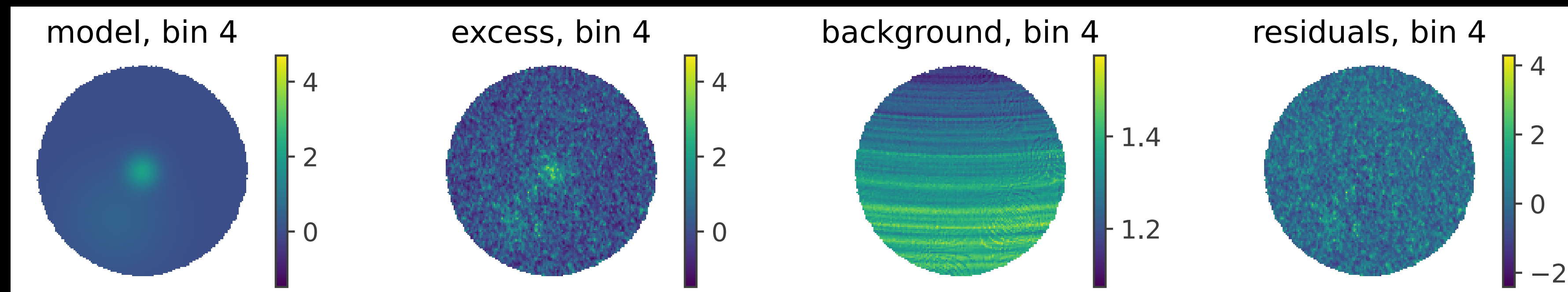
Crab SED with Broken Power Law + Self Synchrotron

Synchrotron (Ginzburg & Syrovatskii 1964)

Inverse Compton (Blumenthal & Gould 1970)

Further Analysis

- Solve Blending Problem



- Multi-wavelength observations of AGN: From X-ray to TeV
- Correlation between HE emission and AGN activity