

Study of source region size

Goal

- Understand how large source region needs to be.
- Minimize computation time in likelihood analysis.

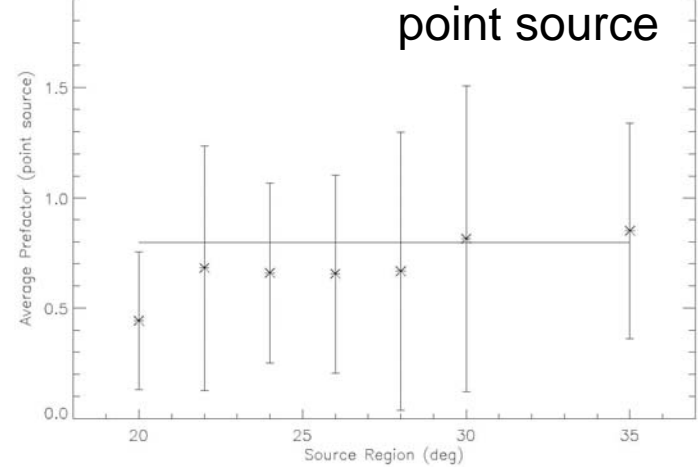
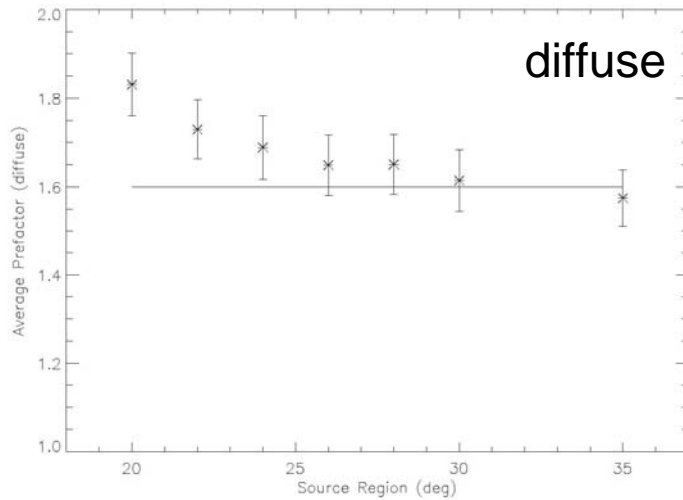
The tests

- EG diffuse + 1 point source (Mkn 421)
- ROI = 20° , $E_{\min} = 20$ MeV
- Vary source region between 20° and 35°
- 4 likelihood tests:
 - EG diffuse only, prefactor free, index fixed
 - EG diffuse only, prefactor and index free
 - EG diffuse + point source, diffuse parms fixed, source parms free
 - EG diffuse + point source, diffuse and source parms free
- 50 trials per source region size ($\times 7$) and per test ($\times 4$)

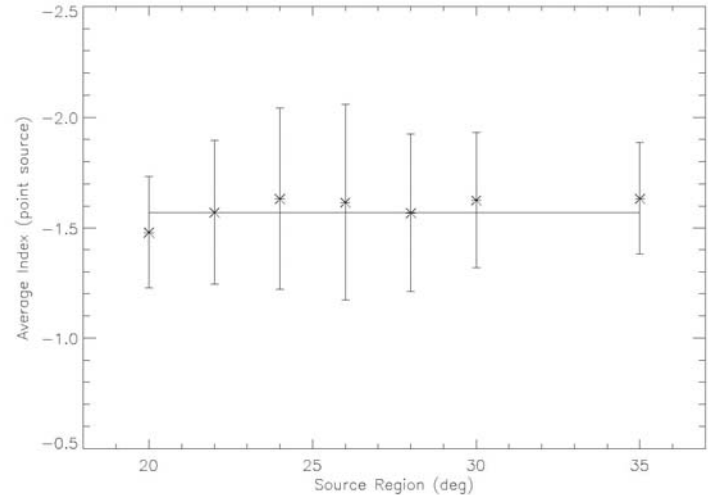
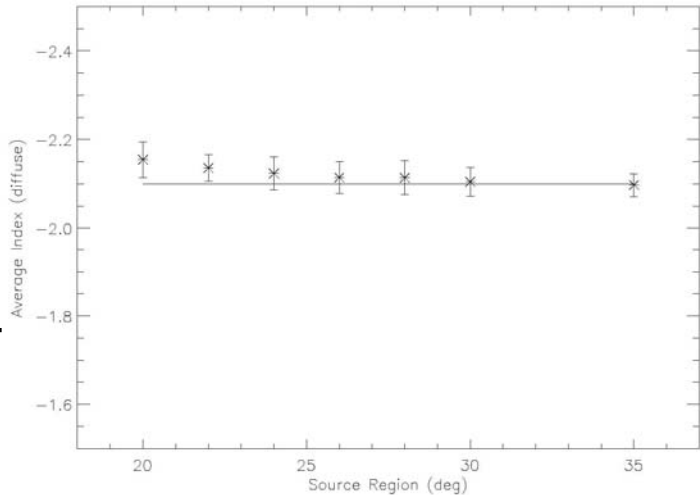
Results of diffuse + point source (all free)

- diffuse flux overestimated when source region too small
- min source region $\approx 30^\circ$
- need more trials for point source results

prefactor



spectral index



Next steps

- increase E_{\min} to 100 MeV
- run more trials for point source results
- change ROI and source region together ($\Delta\theta$ fixed)
- track time savings for each test
- ?