

# Galactic Plane Analysis

- Update of exclusion method
- Update of cuts used in making maps
- Results from JD 1745-2775 (Same as P.N.)
- Next things.

## Exclusion of ROI in direct integration

- With some suggestions from Gus, I've made some extensions to direct integration to exclude a ROI from the background calculation
- How it works:
  - Define a ROI.
    - Label the  $0.1 \times 0.1$  degree bins that are in the ROI, here I'm using  $\pm 5$  degrees in galactic latitude, all longitude.
  - Fill 8 hour maps
    - All events passing cuts go into signal map, and nSider rate array, but only events outside ROI are put in bkg eff map.
  - At end of integration time, normalize map
    - Map is normalized by number of entries in signal map.

# Method, cont...

- Correct the background efficiency map (ha,dec)
  - For each ha,dec location, consider all sidereal time, RA combinations that give that ha value ( $ir=is-ih$ ) and count the total number entries that contribute to your background ( $g\_all[ih][id]$ ) and the number that would have come from the ROI  $g\_onsrc[ih][id]$
  - Each of these “contributions” is weighted by number of events in that sidereal time bin ( $nSider[is]$ ).
  - Correction factor to eff map:
    - $cor\_fact = g\_all[ih][id]/(g\_all[ih][id]=g\_onsrc[ih][id])$
- Calculate the bkg, for all ih,is combinations:
  - $bkg[ir][id] += nSider[is]*eff[ih][id]*cor\_fact[ih][id]$
  - Discovered is,ih,id loop ordering important!

# Data set, cuts and corrections used.

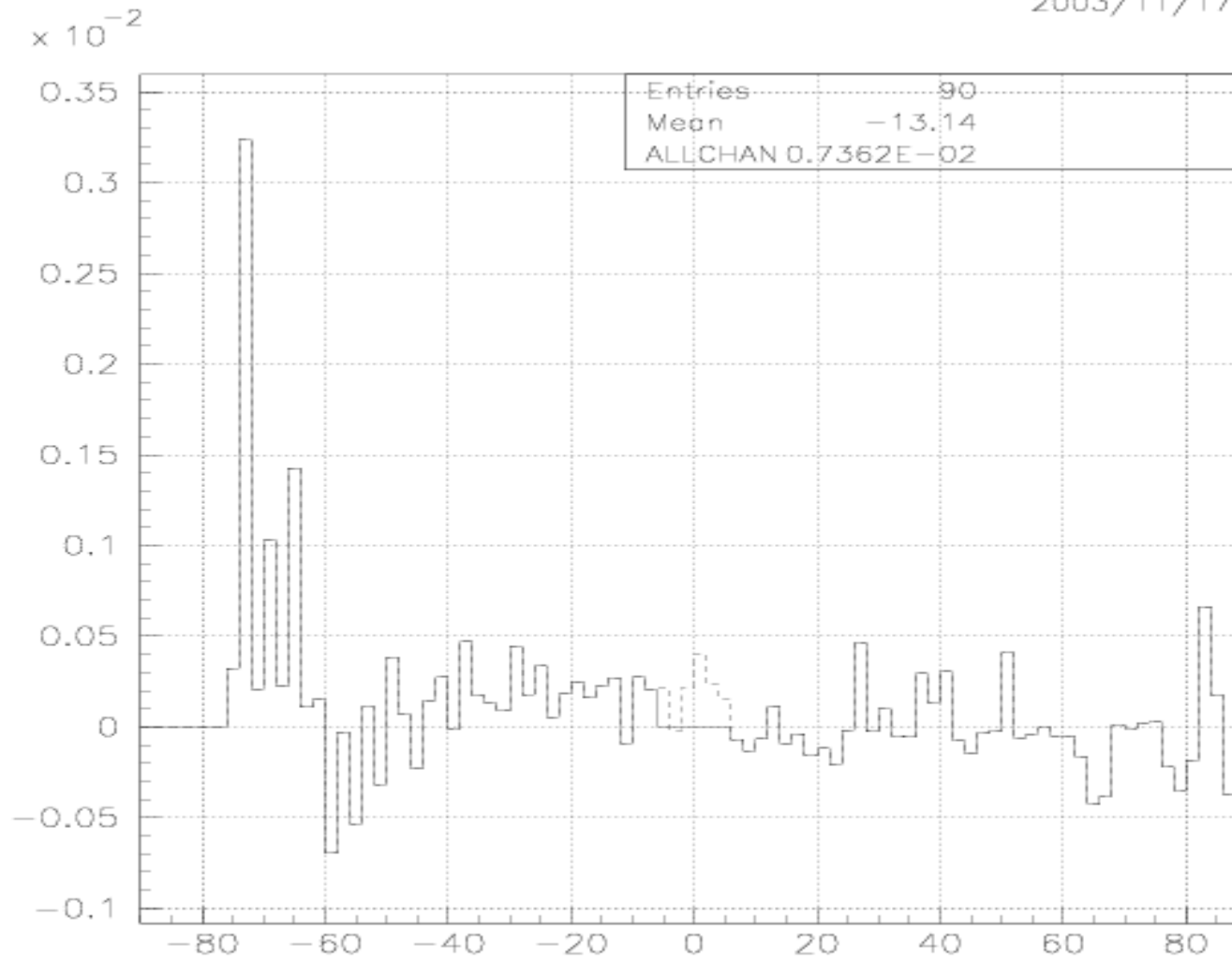
- Used REC data from the same time period as Peter is using. JD: 1745-2775
- Cuts and corrections applied:
  - Flag bad maps are removed
    - When background exclusion fails, flag map
  - Use Andy's rescale of calibrations for 2002
    - More uniform rate of events passing X2 cut
  - Trigger bit cut.
    - Use only Trigger 1 and 2 events, more uniform trigger setting throughout data set.
  - REC data reader fixes included.
  - Require 6 hours integration on each map.

# Tabulation of results IG +/- 5 deg

	No Exclusion		With Old Excl		Corrected Exclusion
<b>14 month, NYU sample</b>					
On	112534035		108172561		99337287
Off	112514125.6		108152705.6		99320435
Excess	19909.4		19855.4		16851.6
Frac Ex	1.77E-004		1.84E-004		1.69E-004
Sigma	1.87		1.91		1.7
Exposure time	385.0 days		363.5 days		332.2 days
<b>JD 1745-2775 Sample of Peter</b>					
On					260501696
Off					260457014
Excess					44681.5
Frac Ex					1.72E-004
Sigma					2.77
Exposure time					755.6 days
<b>OG +/- 5 degrees</b>					
On					279911468
Off					279977139
Excess					-65671.7
Frac Ex					-2.35E-004
Sigma					-3.92
Exposure time					755.6 days

# IG Lattitude profile

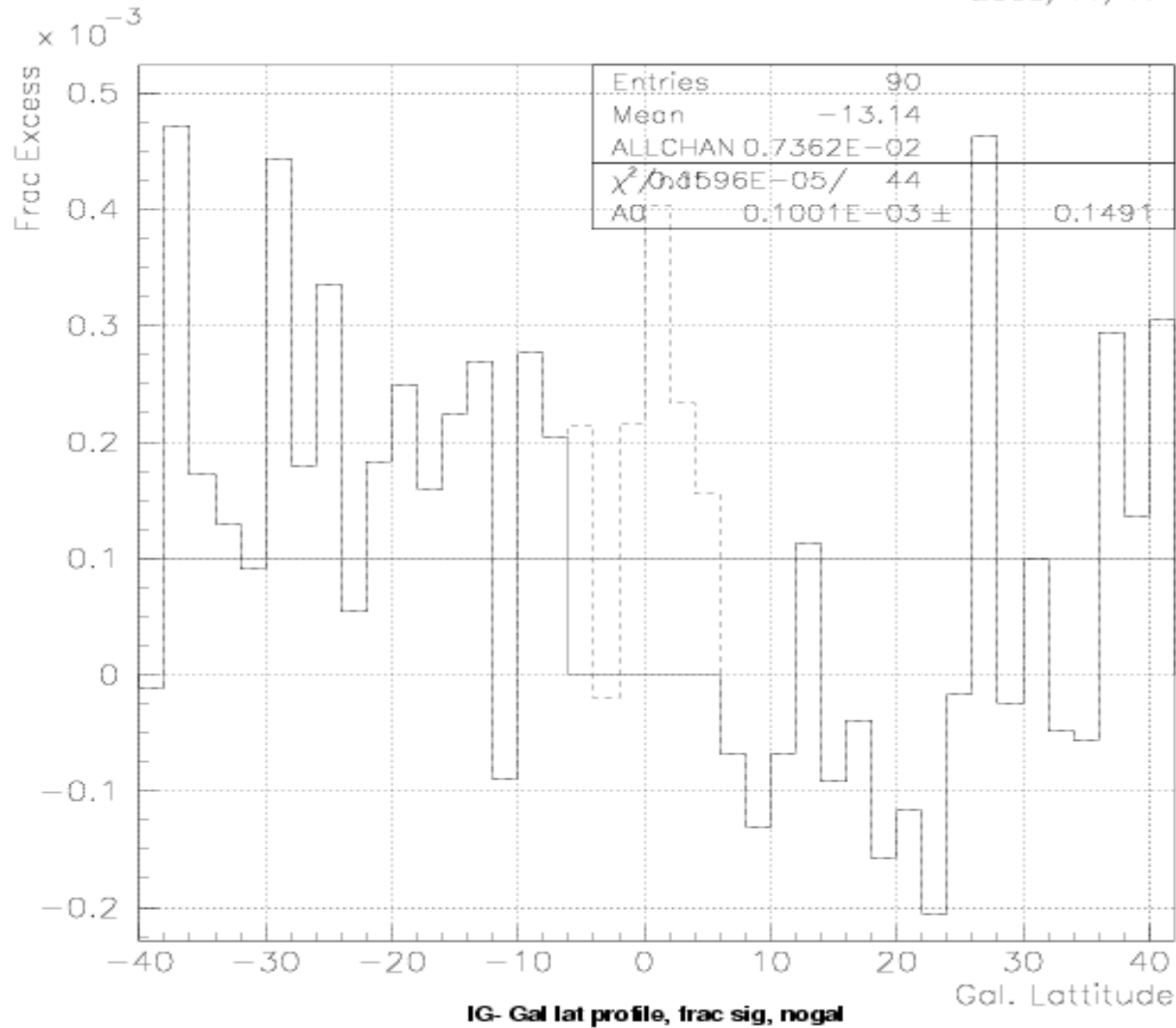
2003/11/17 12.23



IG- Gal lat profile, frac sig, nogal

# IG Floor?

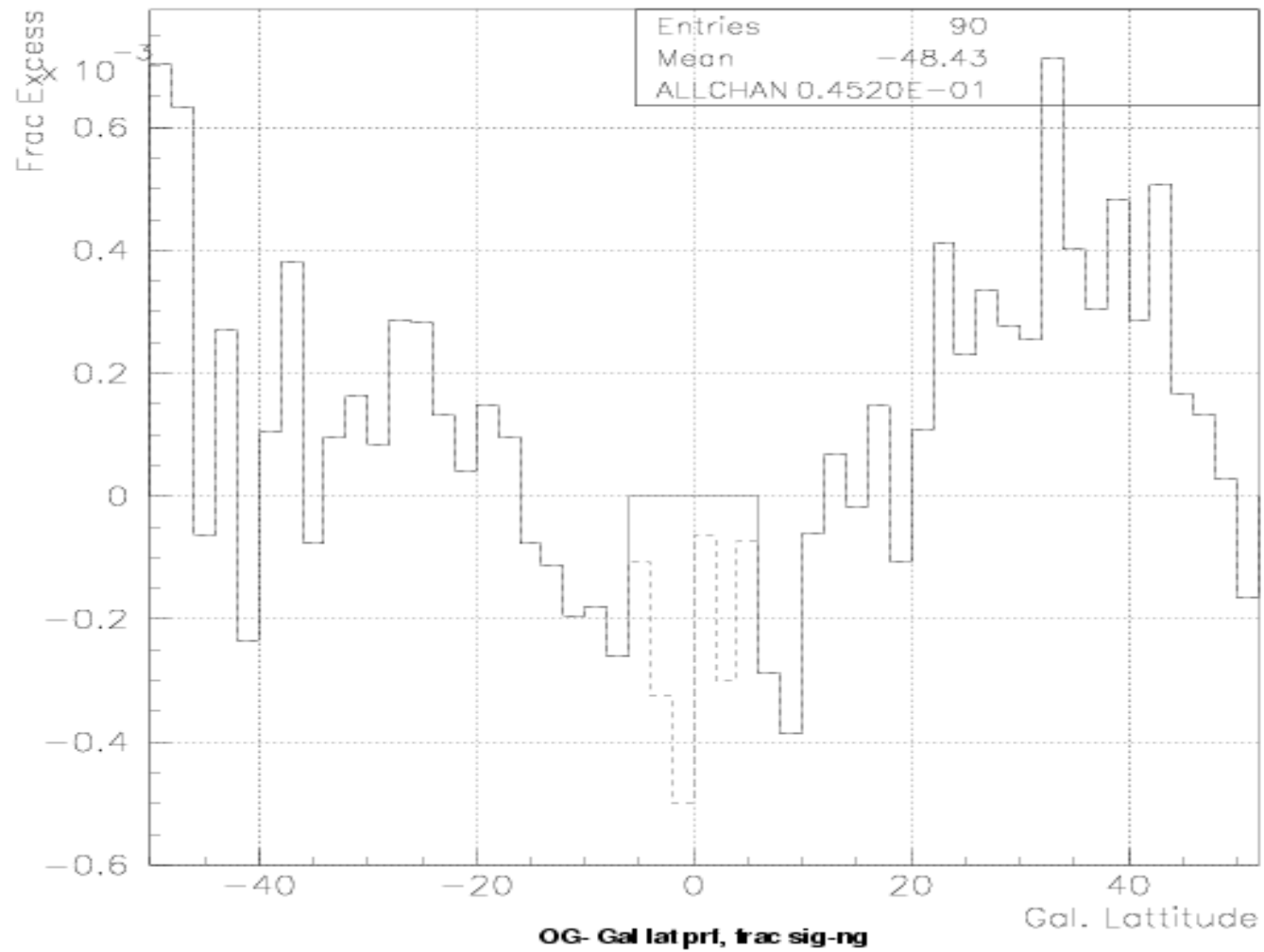
2003/11/17 12.18



New method shows a “floor shift”, just like Peter's, but unlike my previous results.

# OG

2003/11/17 12.33





# Remarks

- At this point, I have not been as careful as Peter in selecting bad runs, carefully checking for bad data.
  - I've been working on a “bad run” utility taking data from run summaries, databases, people's bad run lists
  - Will make available to “Miranda”.
- For such a small signal, this can be a large effect
  - Peter will talk more about this.

# Next things

- Finish bad run selection, re-run on data
  - Including most recent data.
- A better method for taking into account anisotropy of background needed.
- How does these compare to Peter's results?
  - Exact comparisons are tougher, but overall agreement would be good.