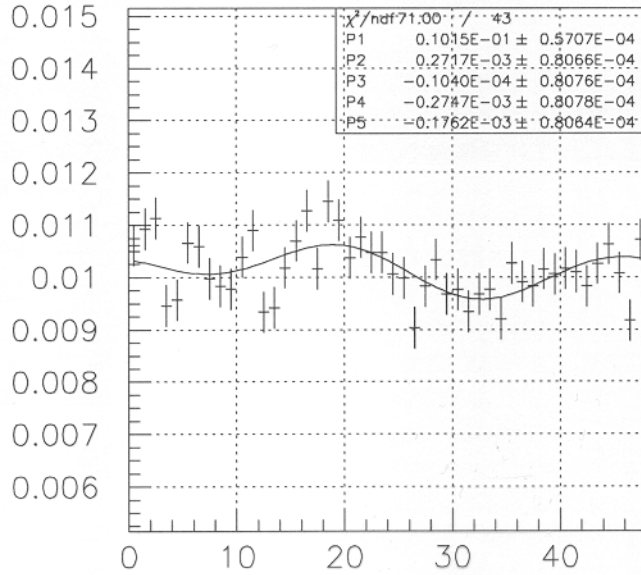
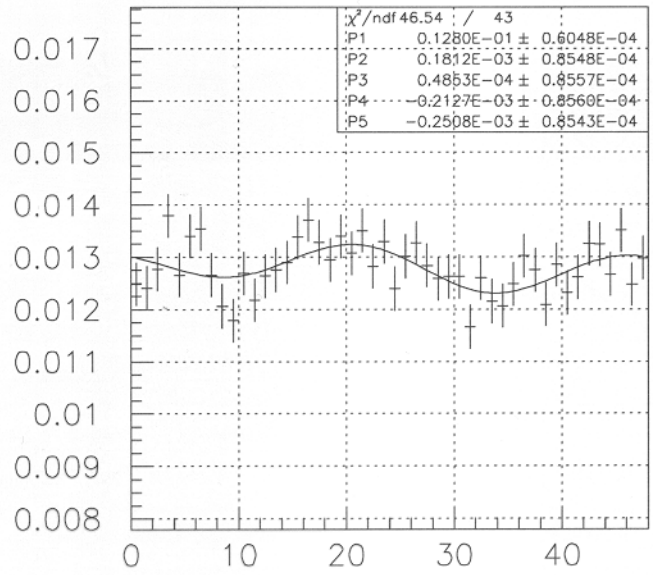


ABCDEFGG (HD S) ANISOTROPY

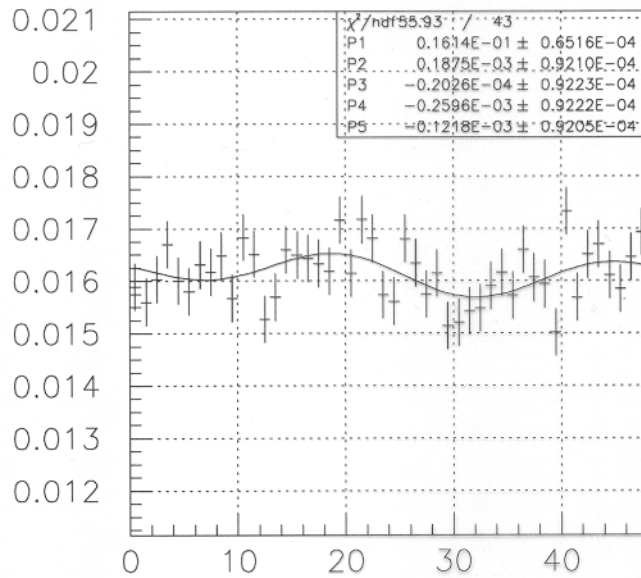


$(rt - lf) / (rt + lf)$

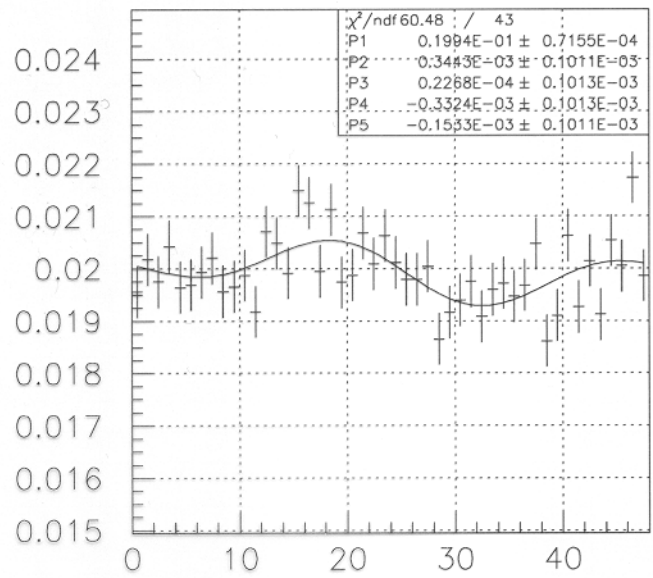
GAL. PL. INCLUDED 1/2003



$(rt - lf) / (rt + lf)$

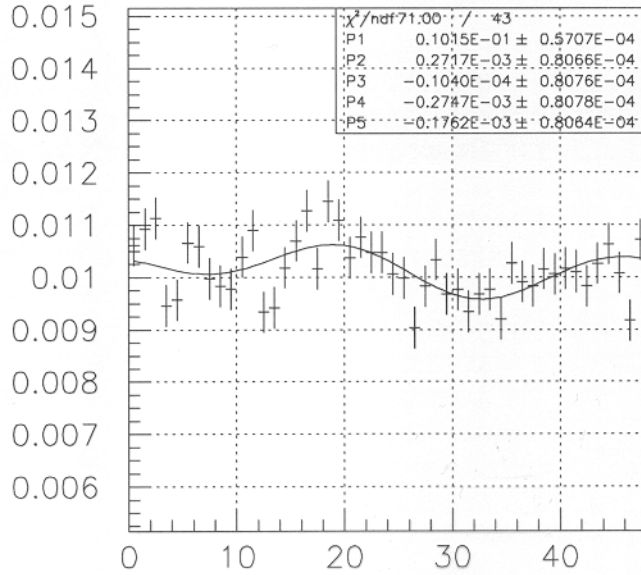


$(rt - lf) / (rt + lf)$



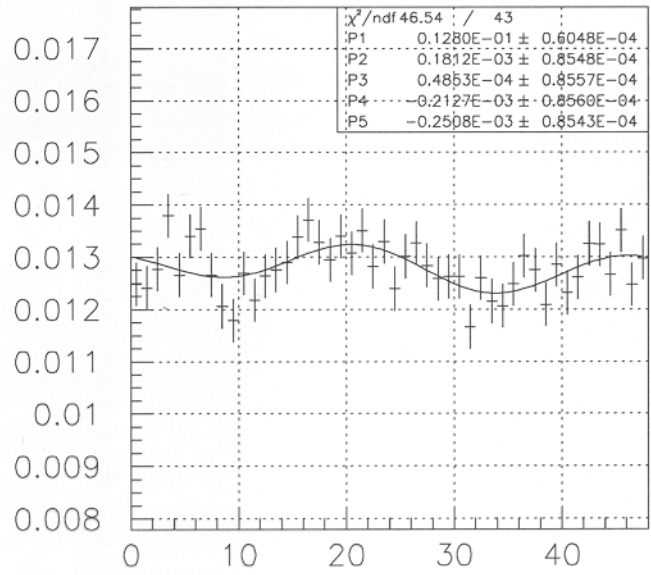
$(rt - lf) / (rt + lf)$

ABCDEFGG (HD S) ANISOTROPY

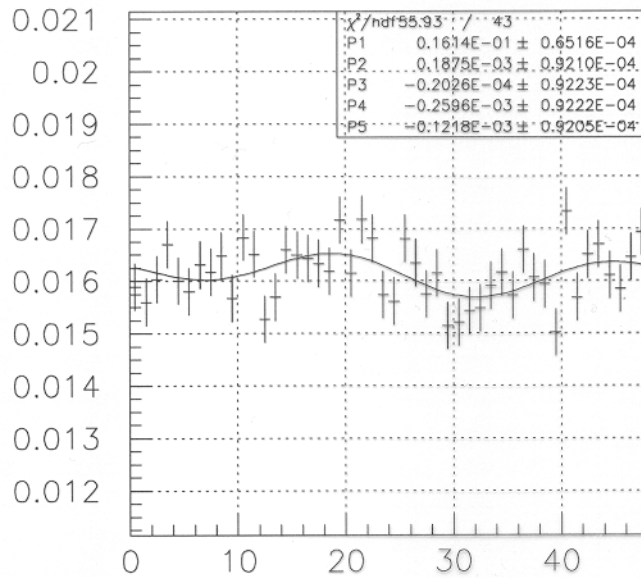


$(rt - lf)/(rt + lf)$

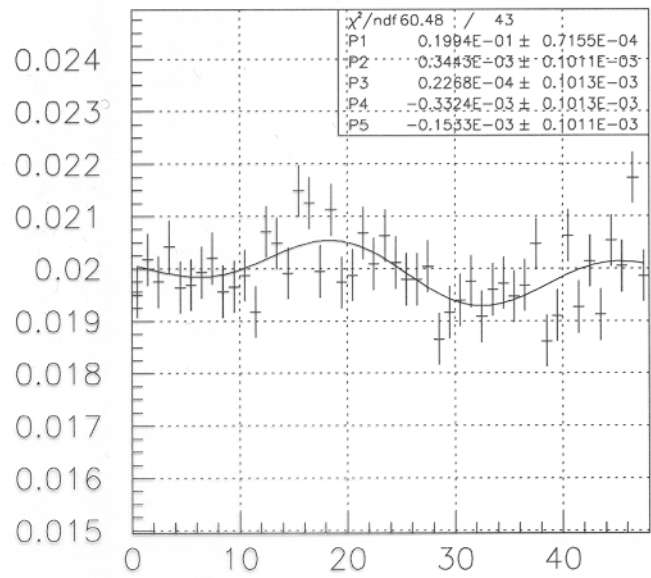
GAL. PL. INCLUDED 1/2003



$(rt - lf)/(rt + lf)$

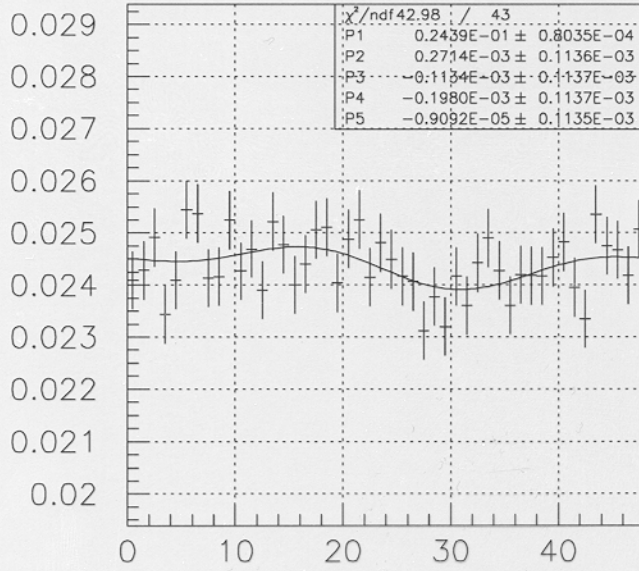


$(rt - lf)/(rt + lf)$



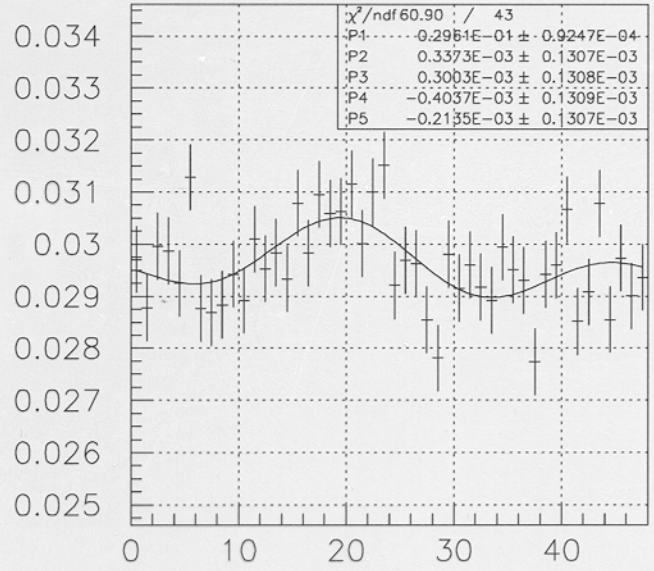
$(rt - lf)/(rt + lf)$

ABCDEFGG (HD S) ANISOTROPY

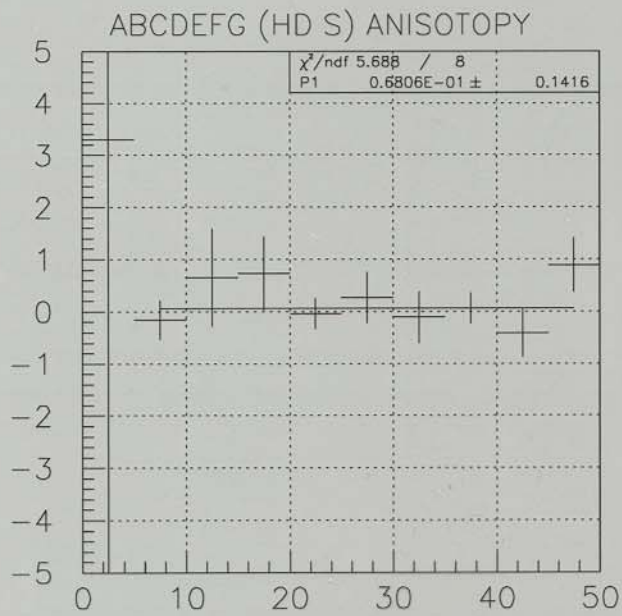


$$(rt-lf)/(rt+lf)$$

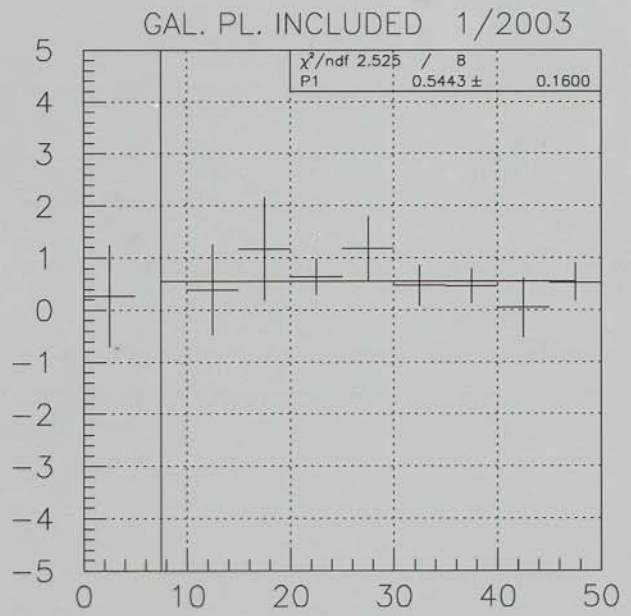
GAL. PL. INCLUDED 1/2003



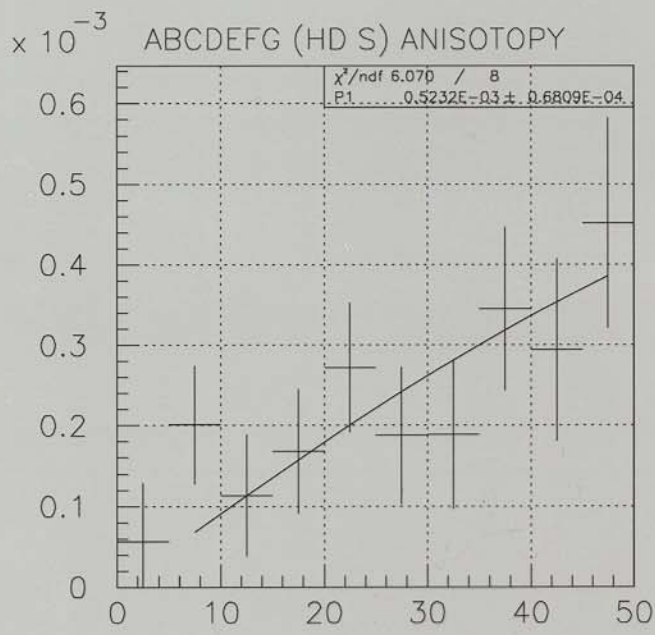
$$(rt-lf)/(rt+lf)$$



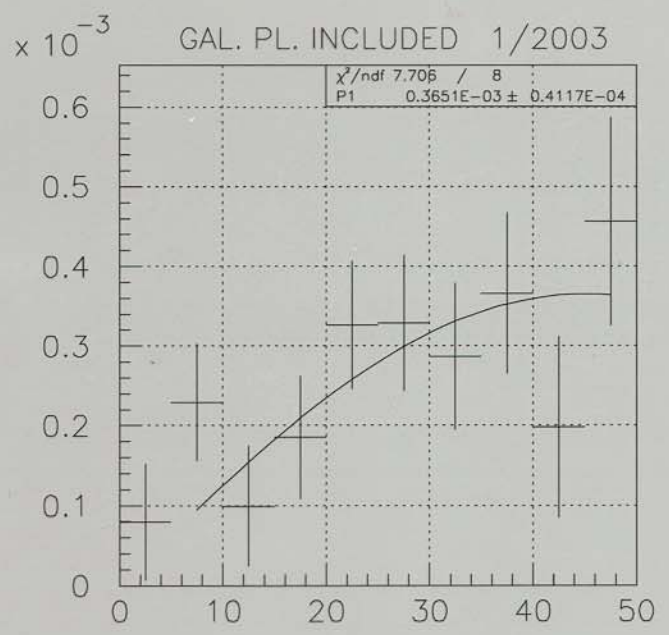
FUND asym tan(phase) vs sep Dec Gp 9



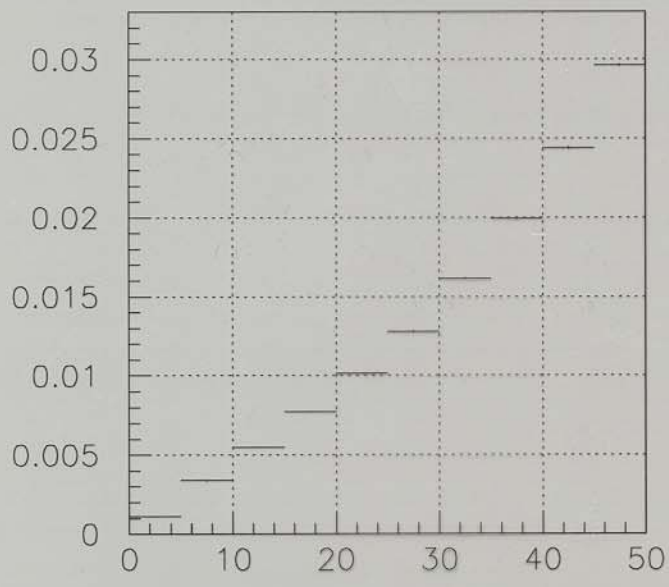
HARM1 asym tan(phase) vs sep Dec Gp 9



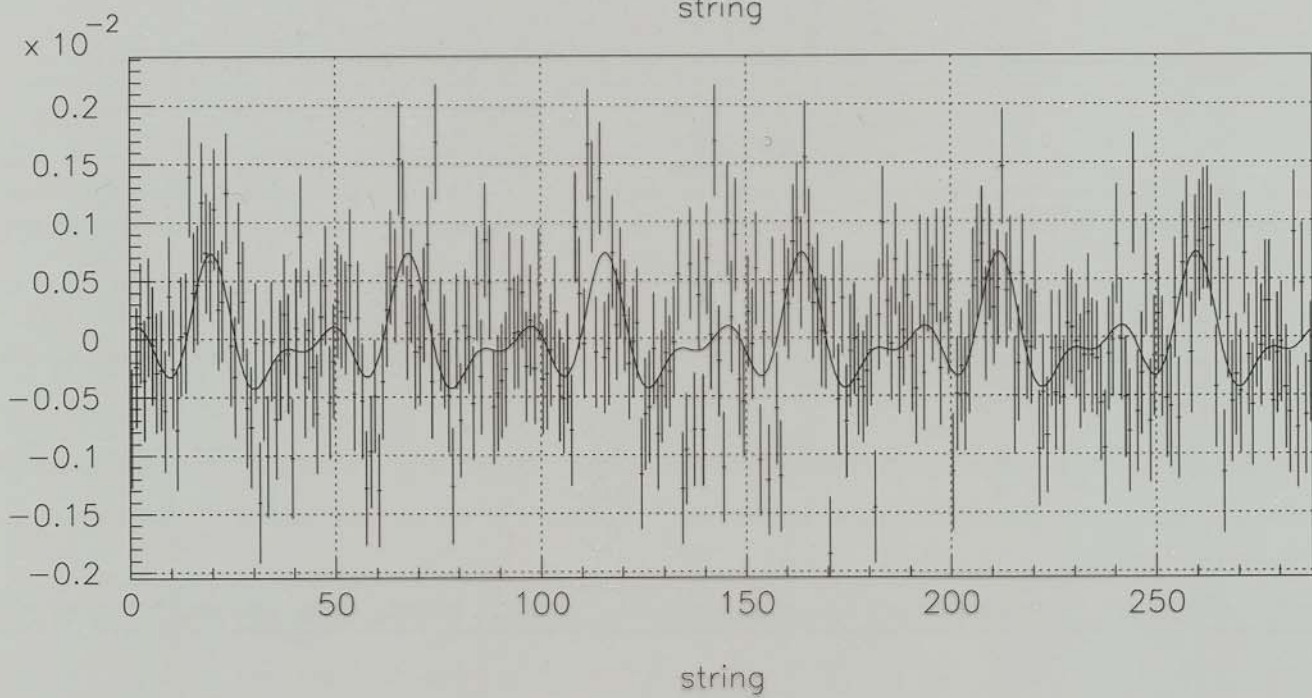
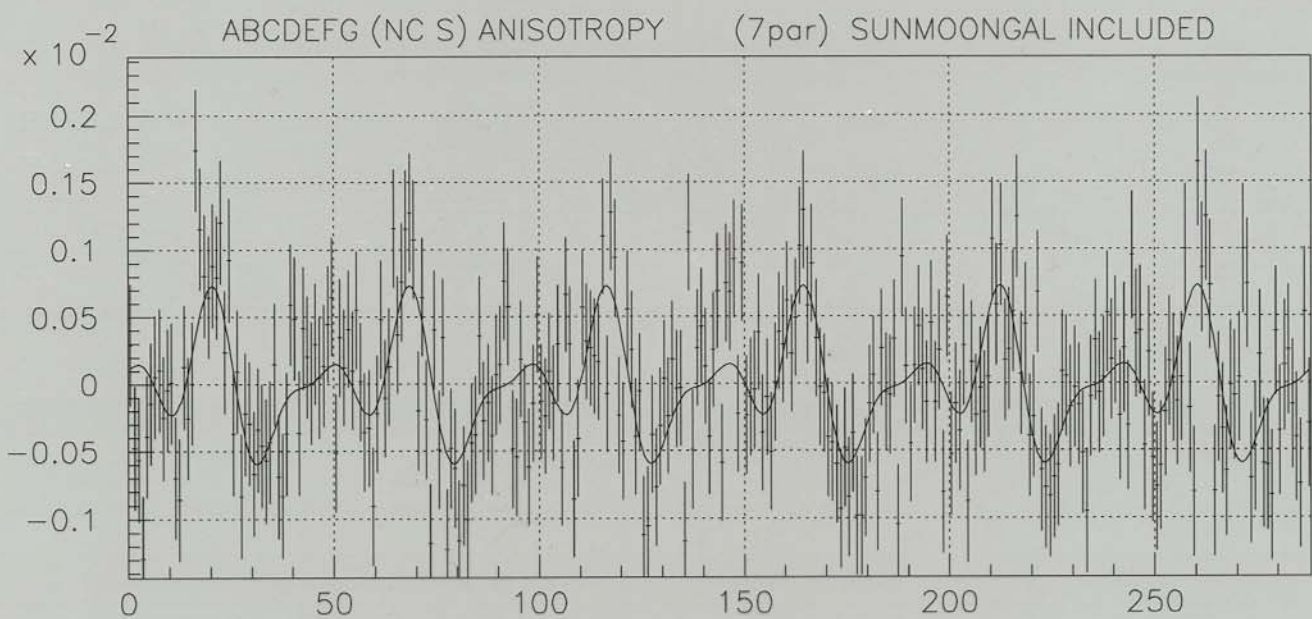
FUND asym amp vs sep Dec Gp 9



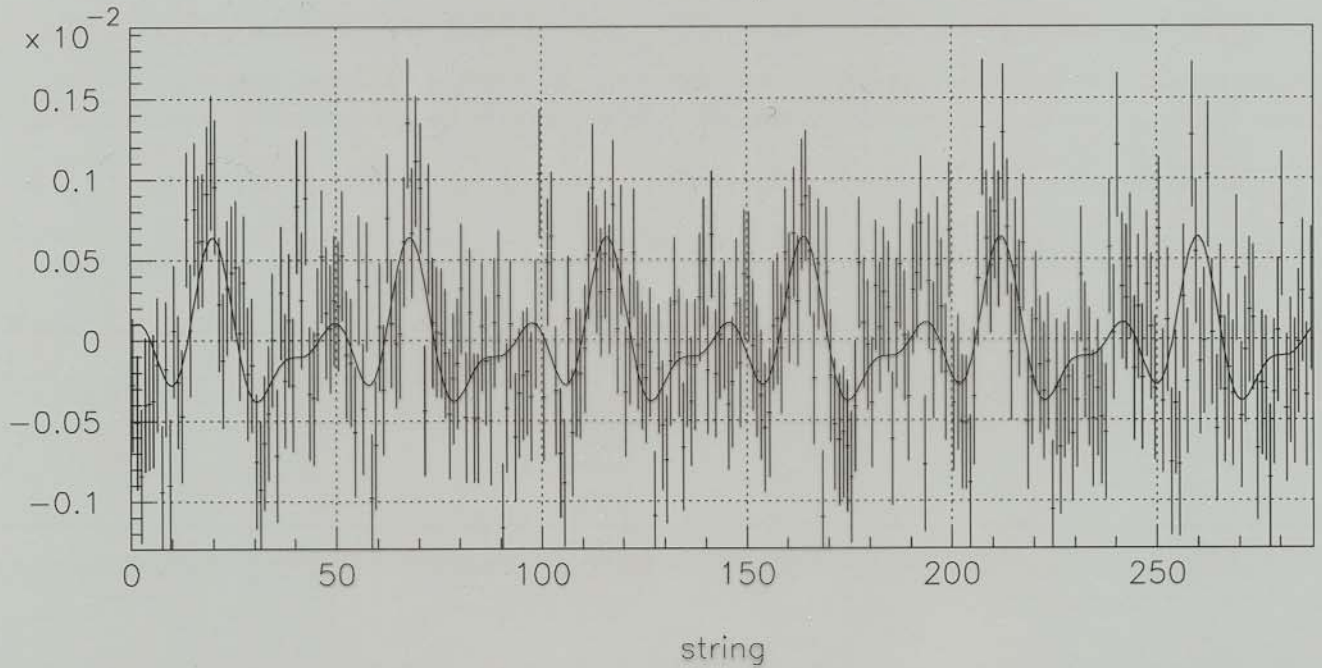
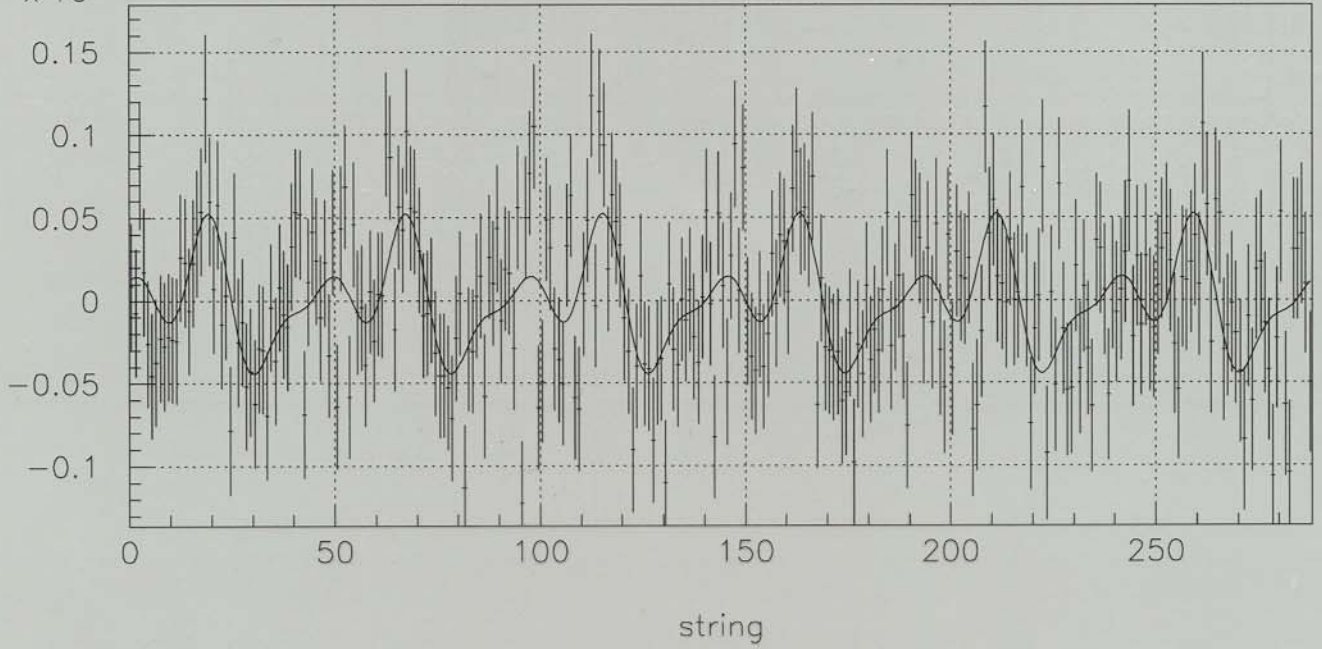
HARM1 asym amp vs sep Dec Gp 9



asym const vs sep Dec Gp 9

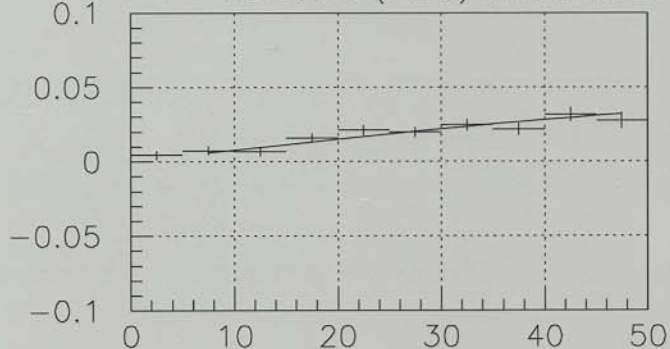


$\times 10^{-2}$ ABCDEFG (NC S) ANISOTROPY (7par) SUNMOONGAL INCLUDED

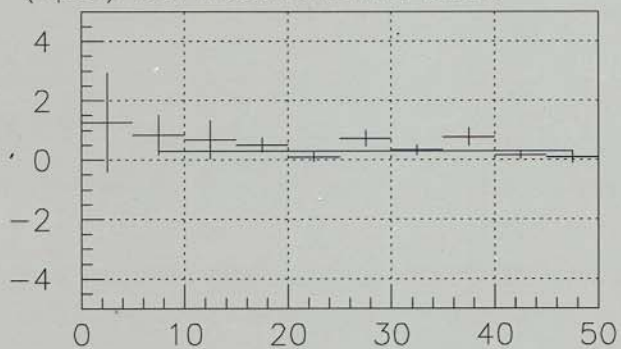


$\times 10^{-2}$

ABCDEFGG (NC S) ANISOTROPY

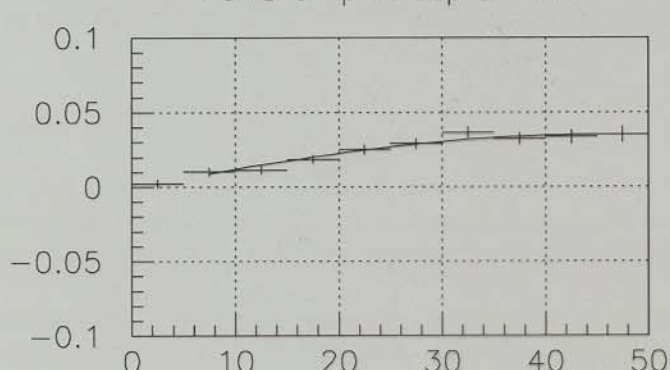


(7par) SUNMOONGAL INCLUDED

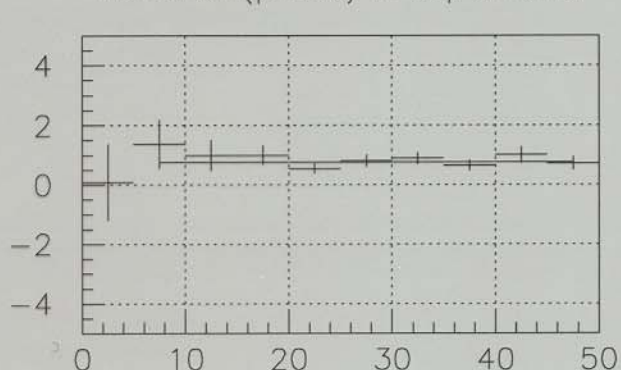


$\times 10^{-2}$

FUND amp vs sep STRING

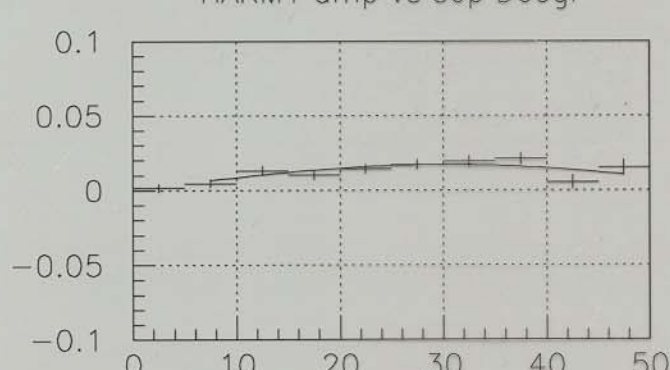


FUND tan(phase) vs sep STRING

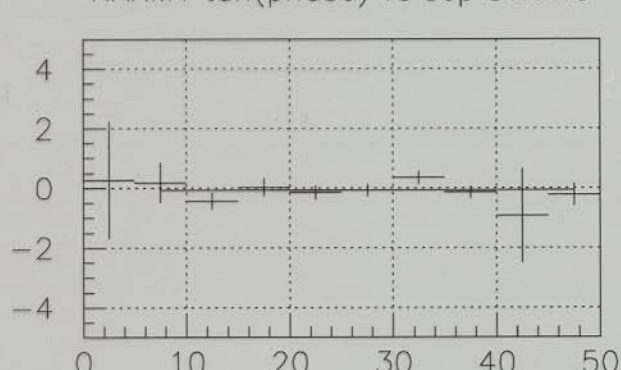


$\times 10^{-2}$

HARM1 amp vs sep Decgr



HARM1 tan(phase) vs sep STRING

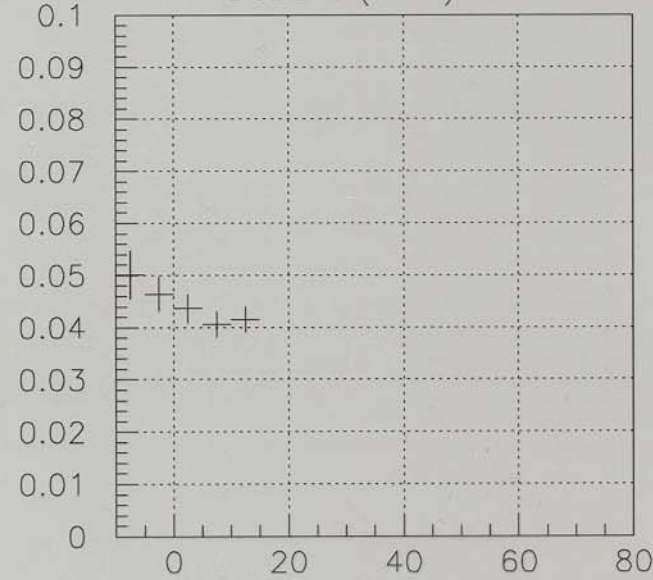


HARM2 amp vs sep STRING

HARM2 tan(phase) sep STRING

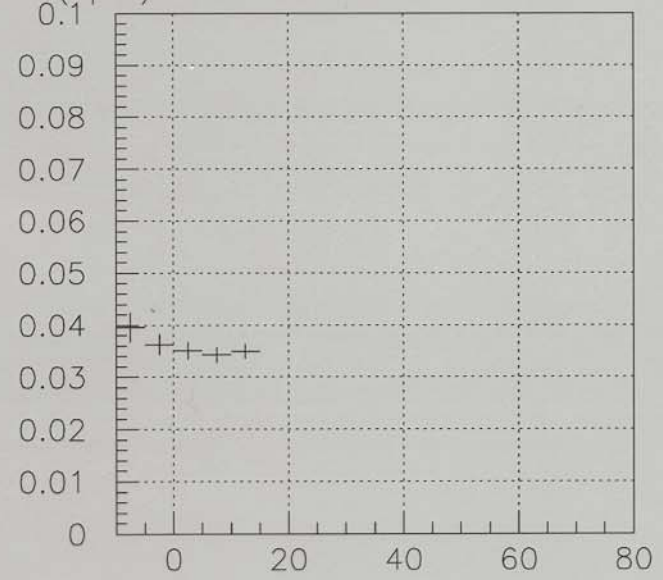
$\times 10^{-2}$

ABCDEFGG (NC S) ANISOTROPY



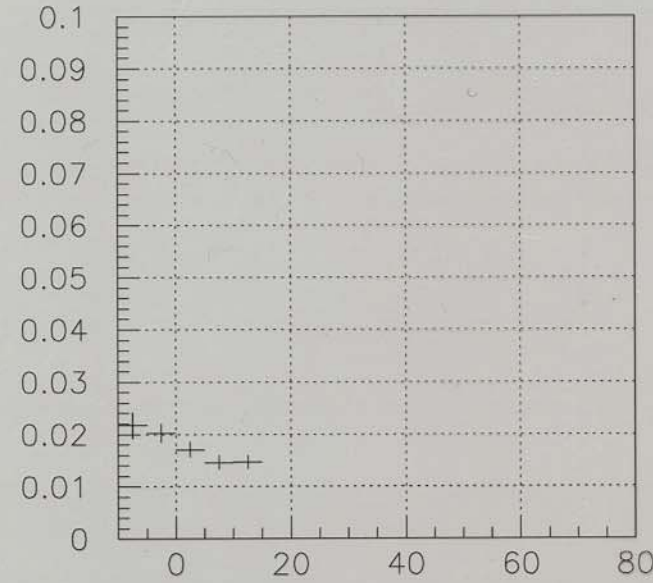
$\times 10^{-2}$

(7par) SUNMOONGAL INCLUDED



$\times 10^{-2}$

ANISOTR AMP FUND vs ~~DEC~~ STR

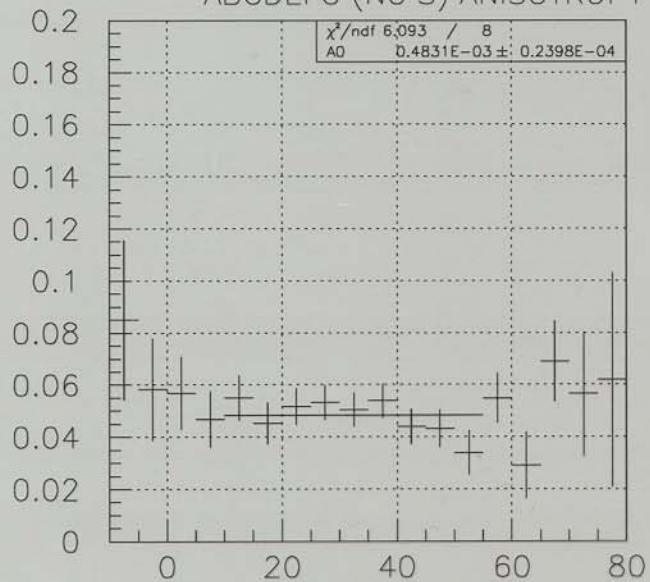


ANISOTR AMP HARM1 vs ~~DEC~~ STR

ANISOTR AMP(ph) HARM2 vs ~~DEC~~ STR

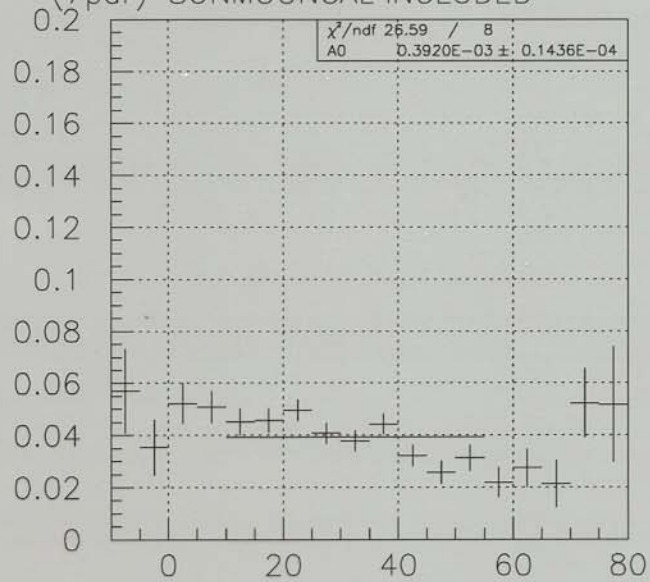
$\times 10^{-2}$

ABCDEFGH (NC S) ANISOTROPY

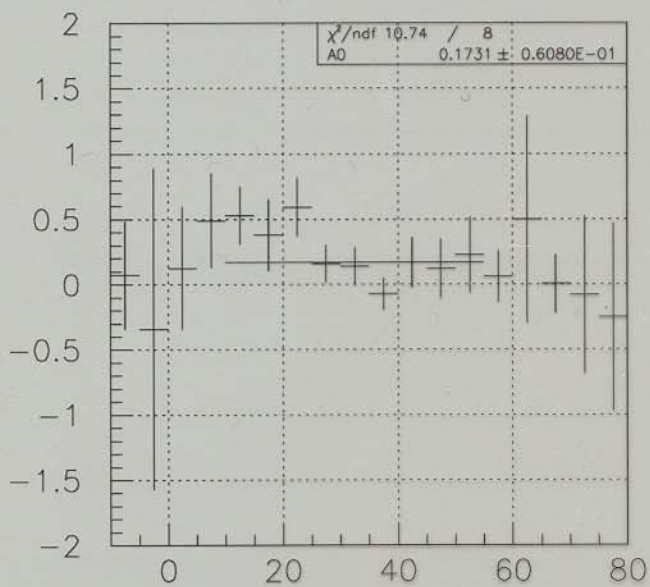


$\times 10^{-2}$

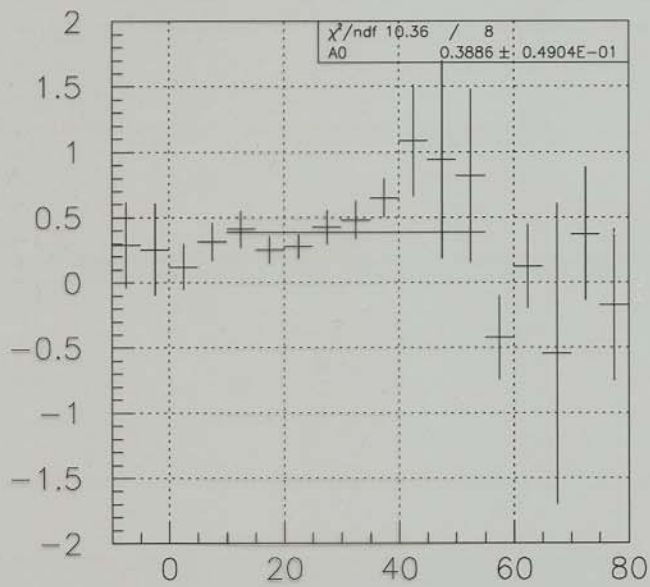
(7par) SUNMOONGAL INCLUDED



ANISOTR AMP FUND vs DEC



ANISOTR AMP HARM1 vs DEC

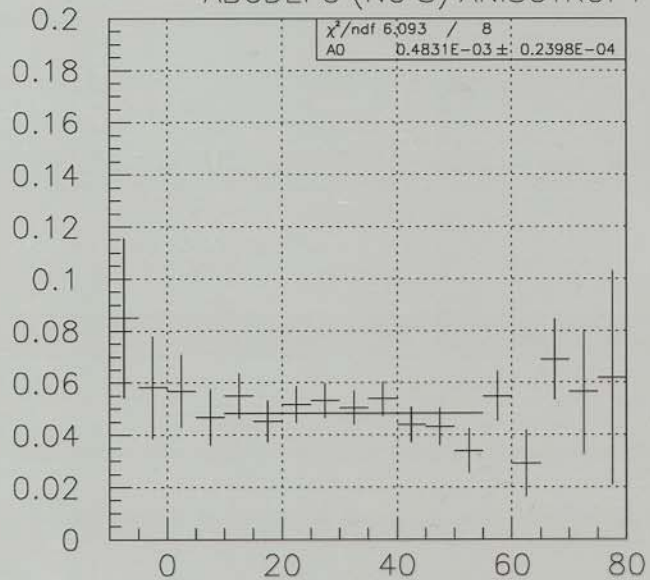


ANISOTR TAN(ph) FUND vs DEC

ANISOTR TAN(ph) HARM1 vs DEC

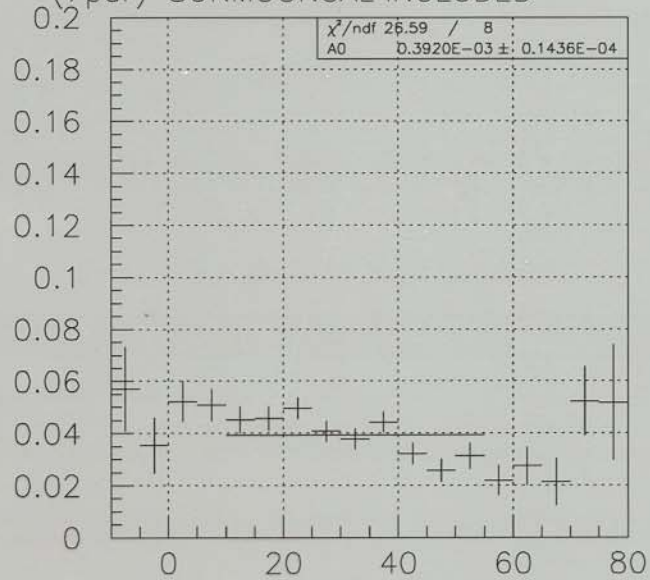
$\times 10^{-2}$

ABCDEFGH (NC S) ANISOTROPY

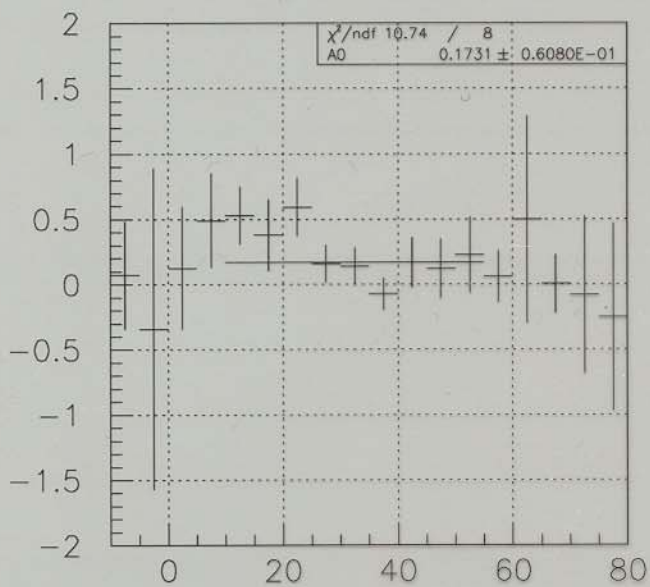


$\times 10^{-2}$

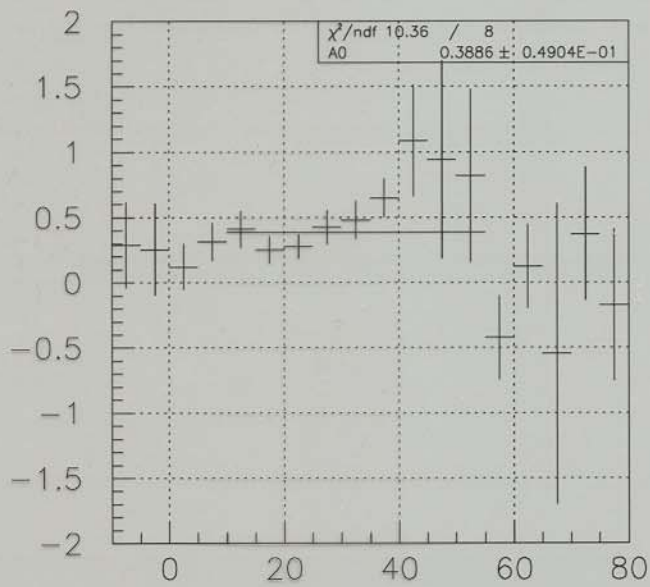
(7par) SUNMOONGAL INCLUDED



ANISOTR AMP FUND vs DEC



ANISOTR AMP HARM1 vs DEC



ANISOTR TAN(phi) FUND vs DEC

ANISOTR TAN(phi) HARM1 vs DEC

⇒ LARGE ANGULAR SCALE:

& COHERENCE:

MULTIPOLE EXPANSION

NATURAL

(FOURIER SERIES)

EX:

if SKY ANISOTROPY is FUNDAMENTAL

$$R(\theta) = 1 + \gamma \cos(\theta - \phi)$$

then

$$\text{FBA MODULATION} = -\gamma \frac{\sin(\theta - \phi) \sin \alpha}{1 + \gamma \cos(\theta - \phi) \cos \alpha}$$

$$\text{FBA MODUL} = \gamma \sin(\theta - \phi) \sin \alpha$$

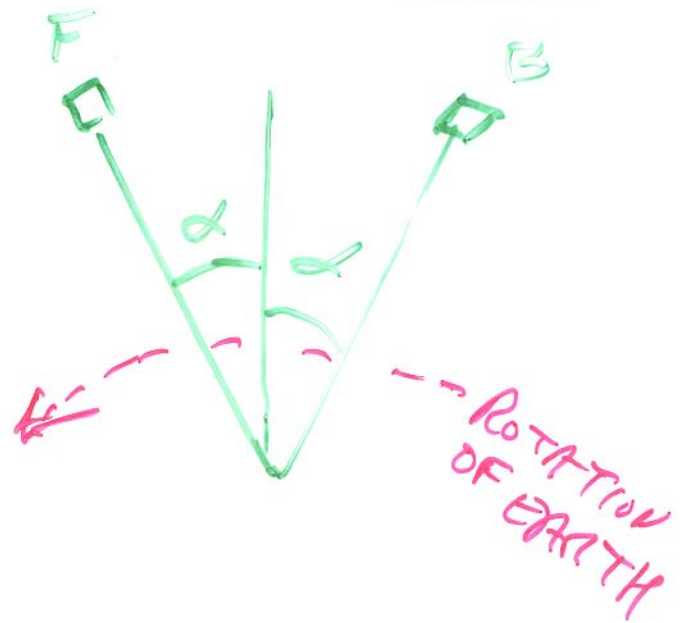
$\sin \alpha$: sensitivity cost
& consistency check!

METHOD:

(NOT SUBTRACTION FAILURE)

RA →

DETECTOR
REASONABLY
SYMMETRIC
IN LOCAL
COORDS (RA, DEC)



FORM FORWARD BACKWARD ASYMMETRY

$$FBA = \frac{R_F - R_B}{R_F + R_B}$$

TIME MODULATED BY CR
ANISOTROPY
AS DETECTOR SWEEPS SKY

⇒ WE CAN STUDY PROJECTION

OF ANISOTROPY IN ROTATION DIR
(RA)

NOT NEC. TRUE AXIS

BUT: THE RELEVANT ONE FOR SUBST. SYST.!

⇒ CR ANISOTROPY A

COHERENT SIGNAL WHEN SUPERIMPOSED
SID. DAY ON SID. DAY

OTHER TIME VARIATIONS: INCOHERENT
(SHOULD NOT KNOW
ABOUT SIDEREAL
TIME!)

⇒ OUR BIGGEST TIME VARIATION
(ZENITH BREATHING)

IS ORTHOGONAL

CANCELS TO FIRST ORDER

⇒ SENSITIVITY DECREASED BY
FINITE α AVAILABLE $< 50^\circ$

WHAT IF ANIS INSTEAD OF DEC?

(EQUIV: IF WE LOOK FOR A COMMON PART

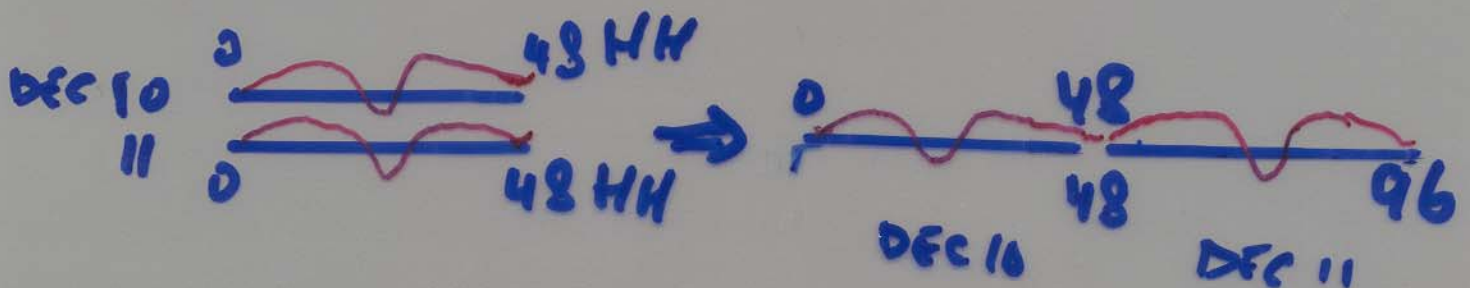
COULD TAKE A BAND

IN DEC; then FIT. ~~X~~ CHOOSE
NOT
TO

INSTEAD:

ASK FOR SIMULTANEOUS
FIT OF SAME FUNCTION OF
ALL DEC SLICES IN BAND !

NATURAL WAY: "STRING"



ANISOTROPY OF COSMIC RAYS

Peter Neimethy
& Roman Fleischer

7/2003

MILAGRO
COLLAB. MTG.

C. R. NEARLY ISOTROPIC

(MAG. BENDING SCRAMBLES)

⇒ ANY ANISOTROPY LARGE ANGULAR
SCALE

MOTIVES:

^{CORRECT}
(1) SYSTEMATIC ERRORS IN
BACKGROUND SUBTRACTION

(SEE EVIDENCE IN GAL. PLANE ANALYSIS)
READY TO TRY

(2) PHYSICS: DEVIATIONS FROM
PERFECT ISOTROPY
INTERESTING

NOT READY
MUCH WORK
LEFT

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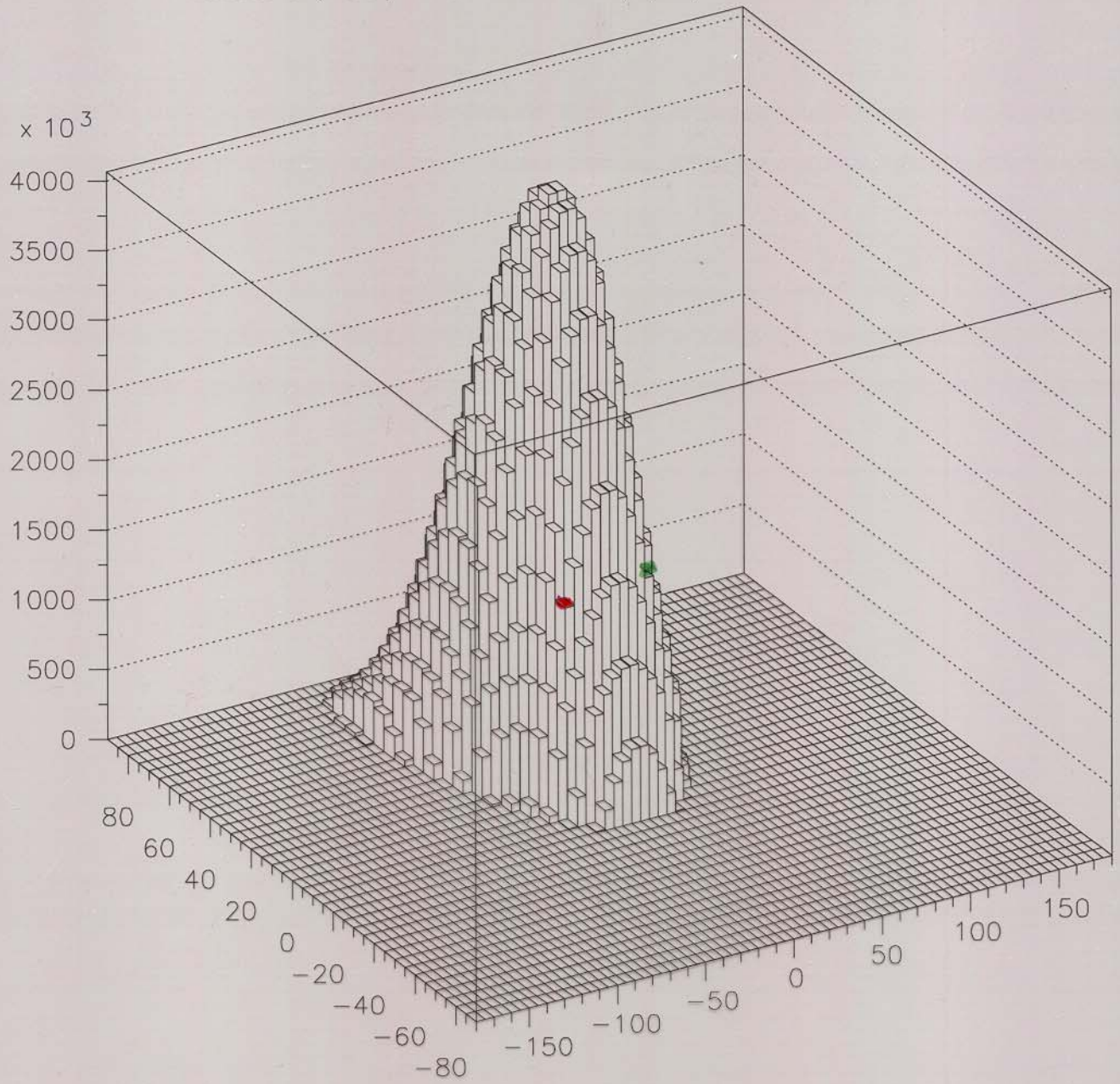
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Sidereal half hour 4. Proton.