

GENEVA MEETING

07/12/2005

Sonia Natale

•Vertex studies

Data Sample

(still waiting for files with last code version)

Layer Efficiency
and
Hit Resolution

Run	Energy	Trigger	Magnet	Converter	S/N cut	# Events
1210	5 GeV	BC1C2	OFF	OFF	4	67500
1456	7 GeV	BC1C2	ON	OFF	4	29225
1461	7 GeV	BC1C2	ON	OFF	4	29524
1462	7 GeV	BC1C2	ON	OFF	4	8643
1394	5 GeV	BC1C2	ON	ON	4	29192 (+...)
1416	3 GeV	BC1C2	ON	ON	4	1 (+...)
1428	3 GeV	BC1C2	ON	ON	4	1229 (+...)
1470	7 GeV	BC1C2	ON	ON	4	196 (+...)
1471	7 GeV	BC1C2	ON	ON	4	111 (+...)

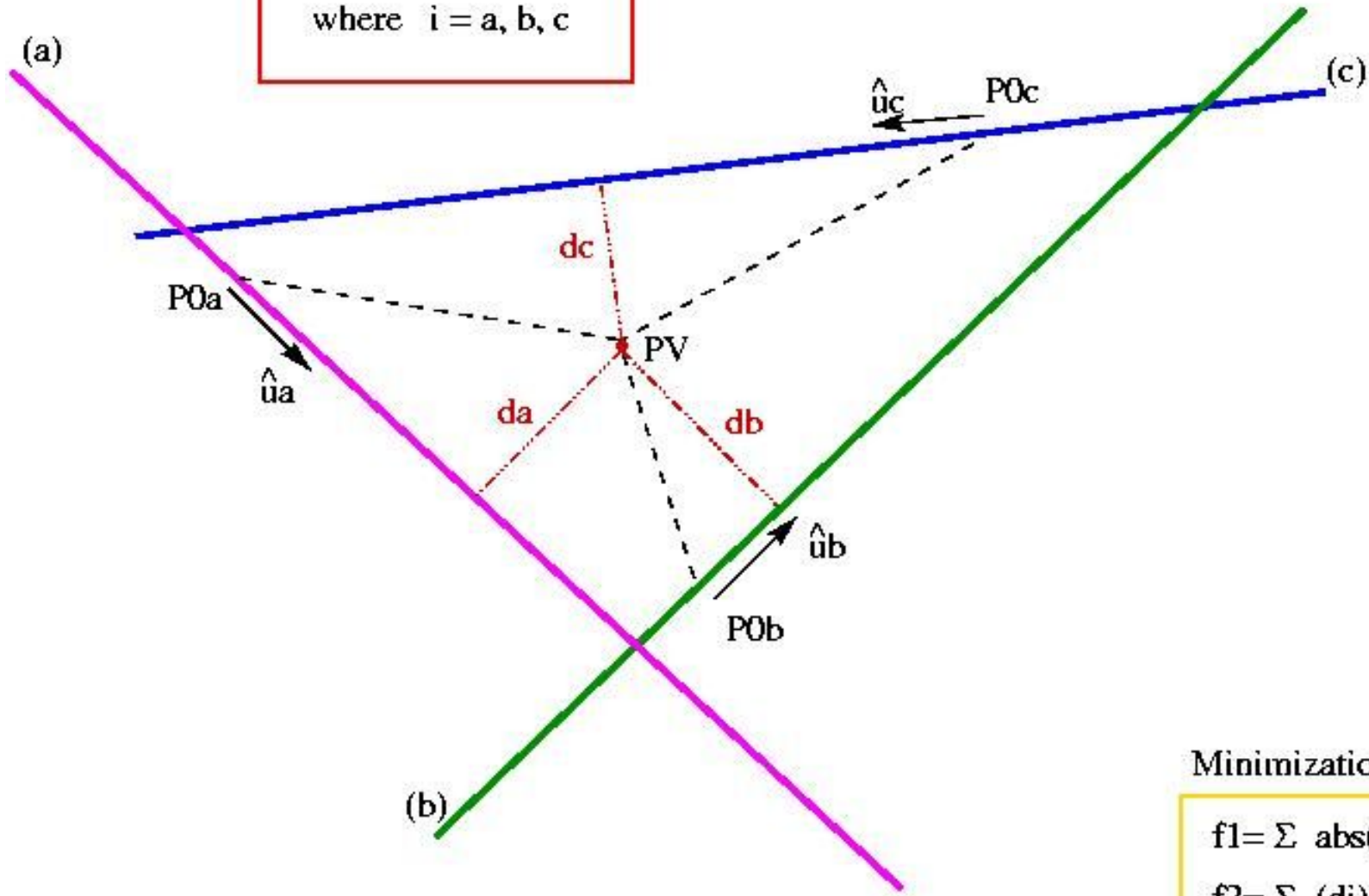
Momentum
Resolution
vs
Hits (track)

Photon Energy and Angular Resolution
(Momentum Resolution vs Energy)

New Vertex Algorithm

$$\vec{d}_i = \vec{PVPO}_i \wedge \hat{u}_i$$

where $i = a, b, c$



Minimization of:

$$f_1 = \sum \text{abs}(d_i)$$

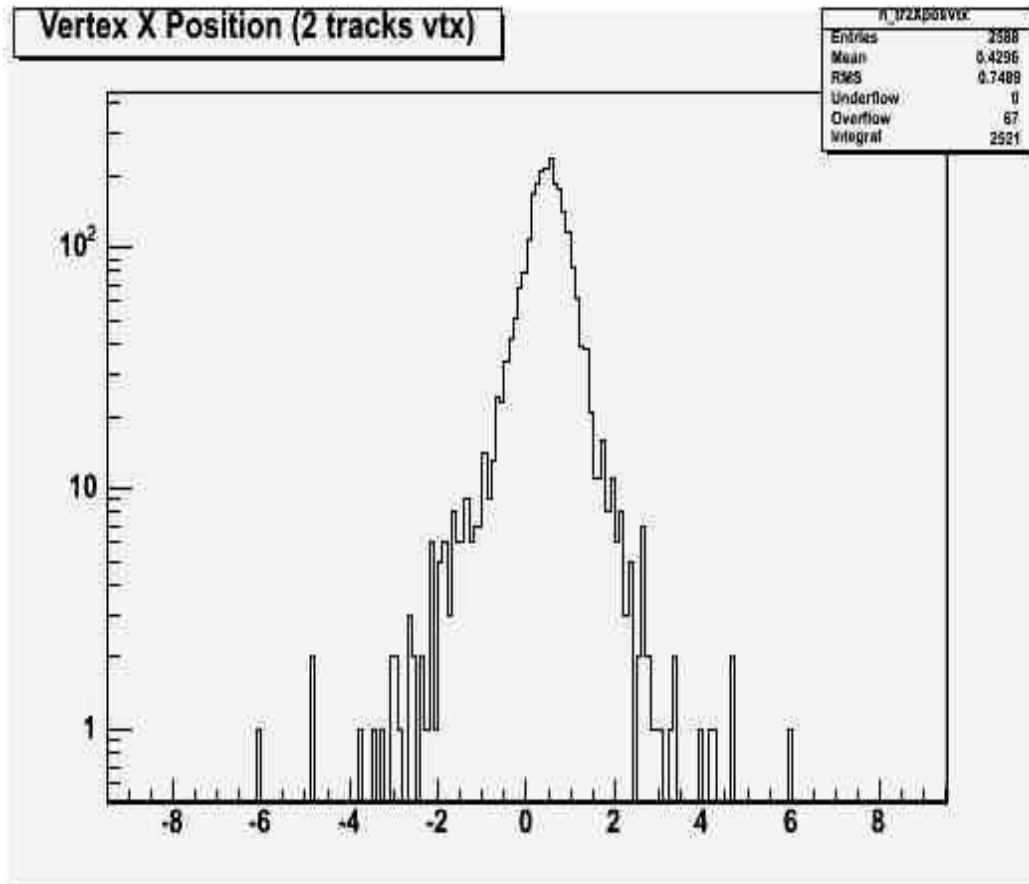
$$f_2 = \sum (d_i)^2$$

$$f_3 = \sum (d_i/\sigma_i)^2$$

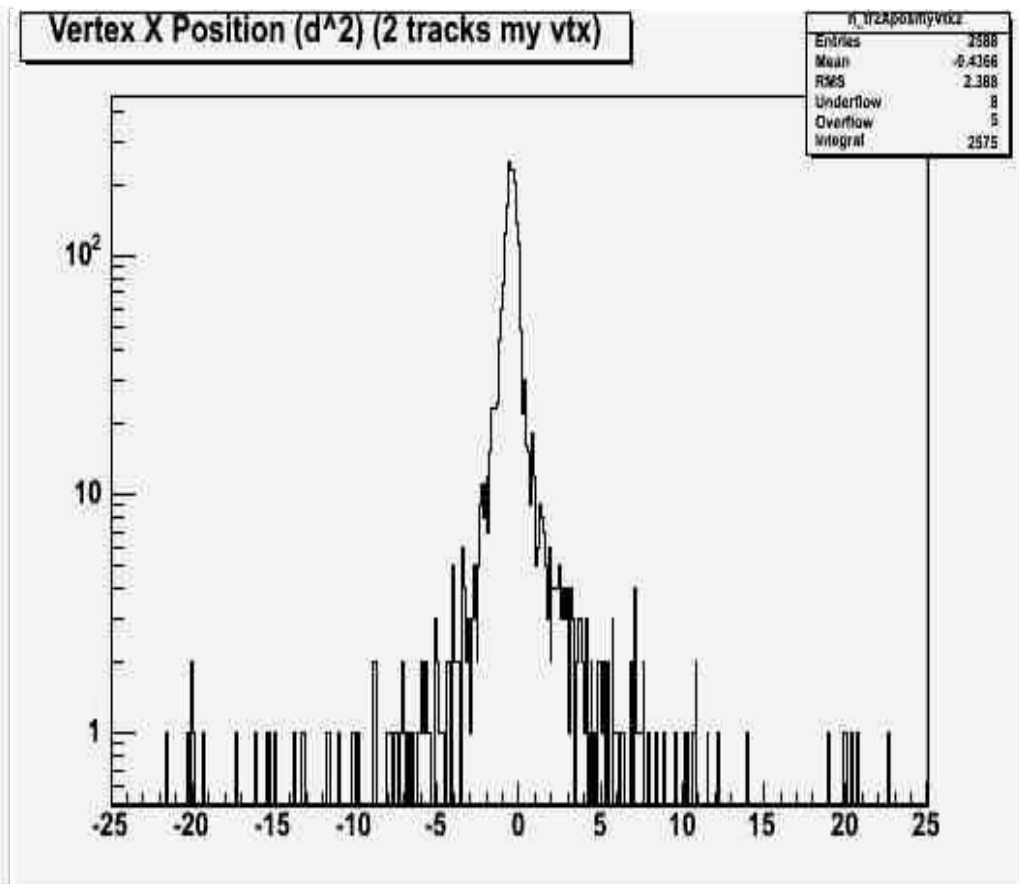
Vertex distributions

X Vtx position (2 tracks)

old

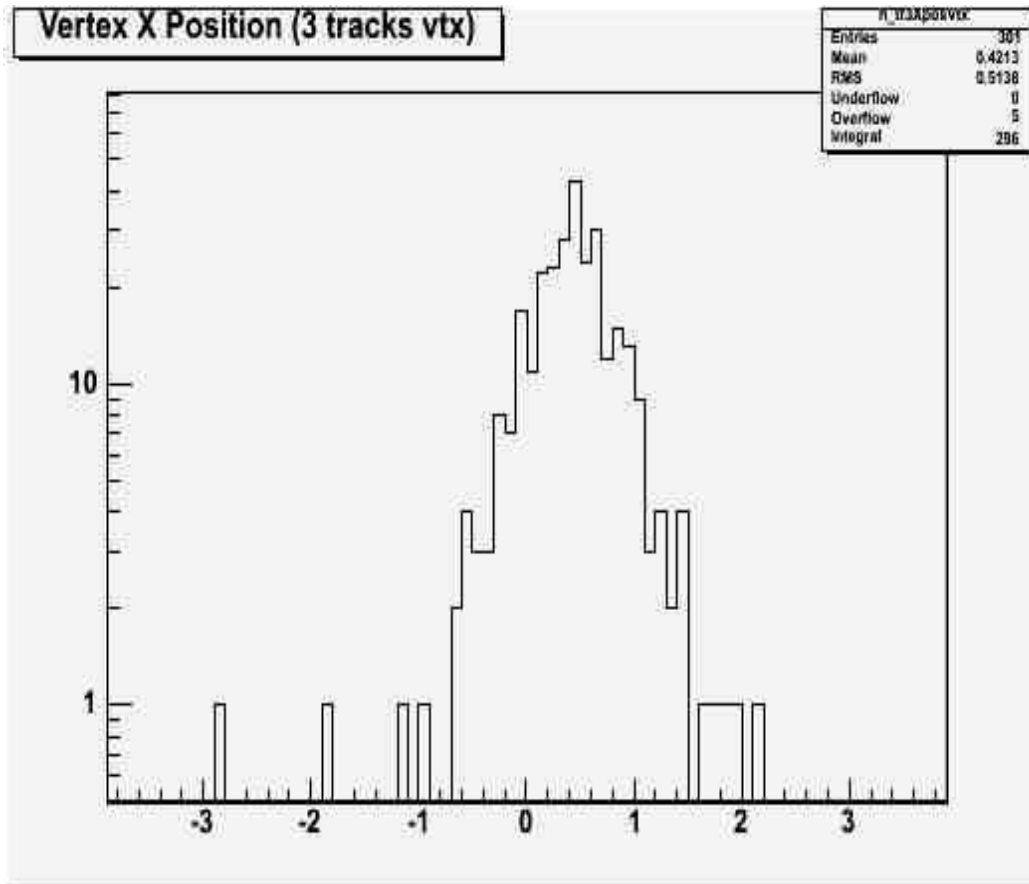


new

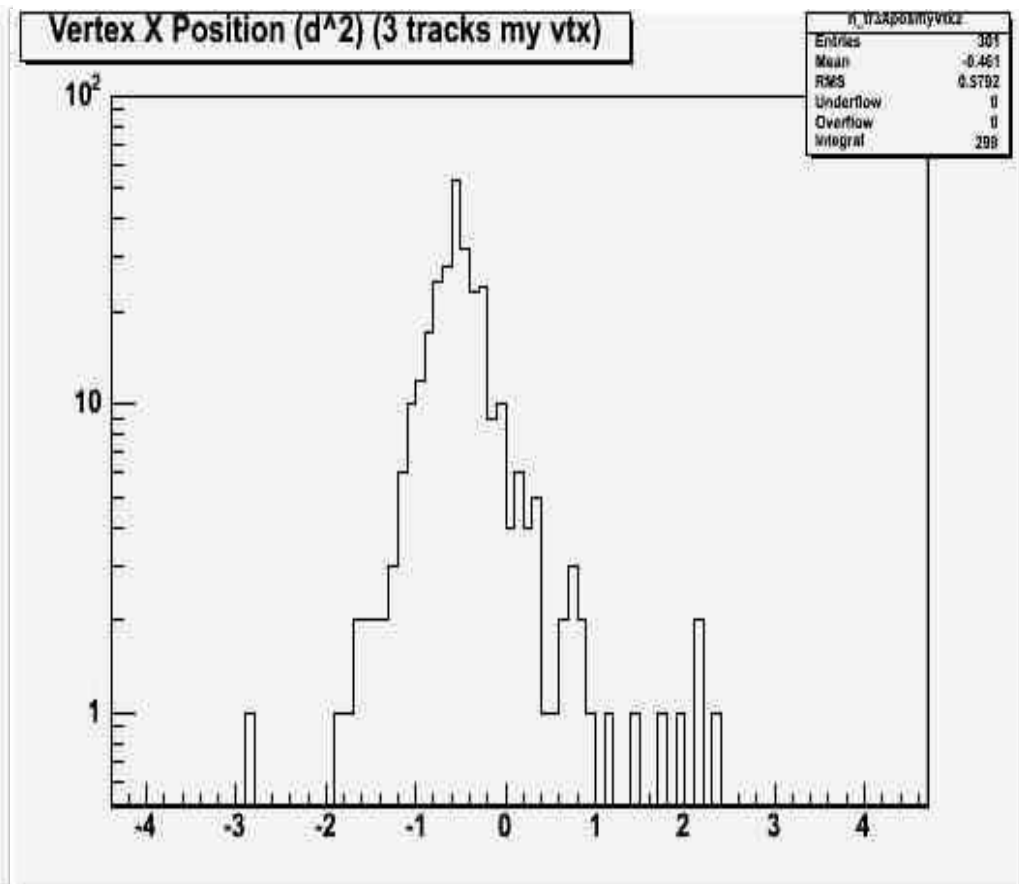


X Vtx position (3 tracks)

old

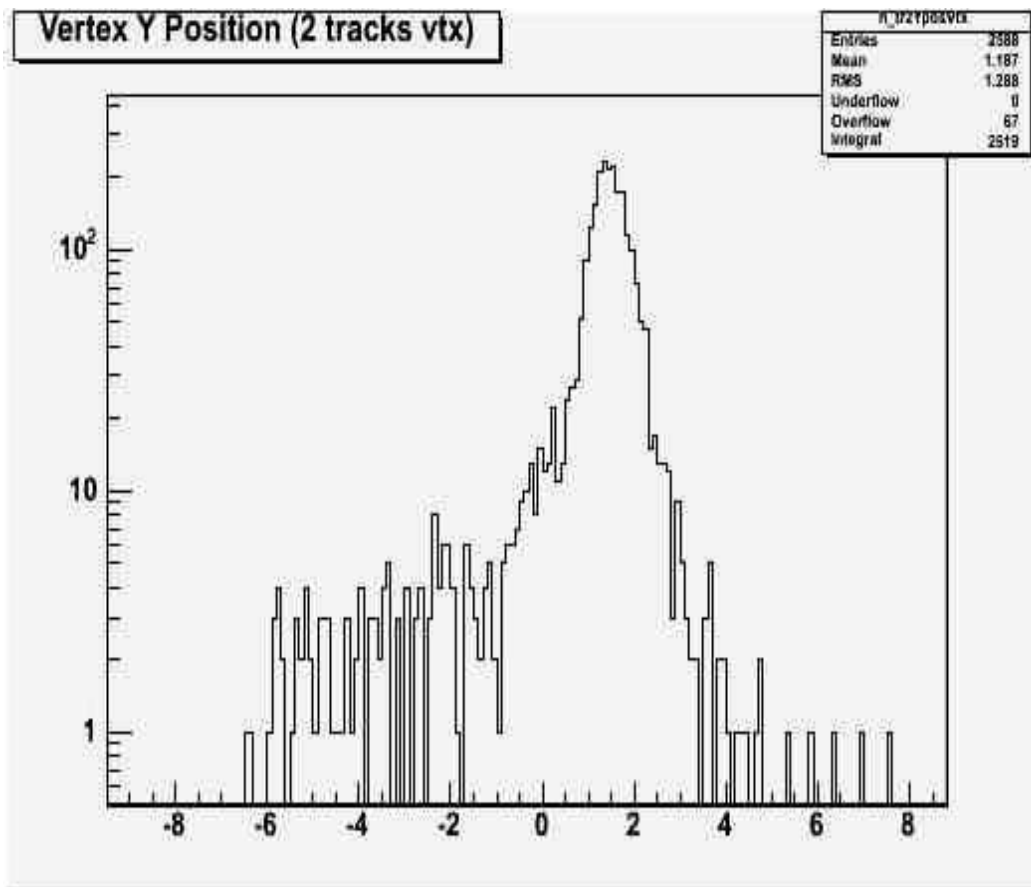


new

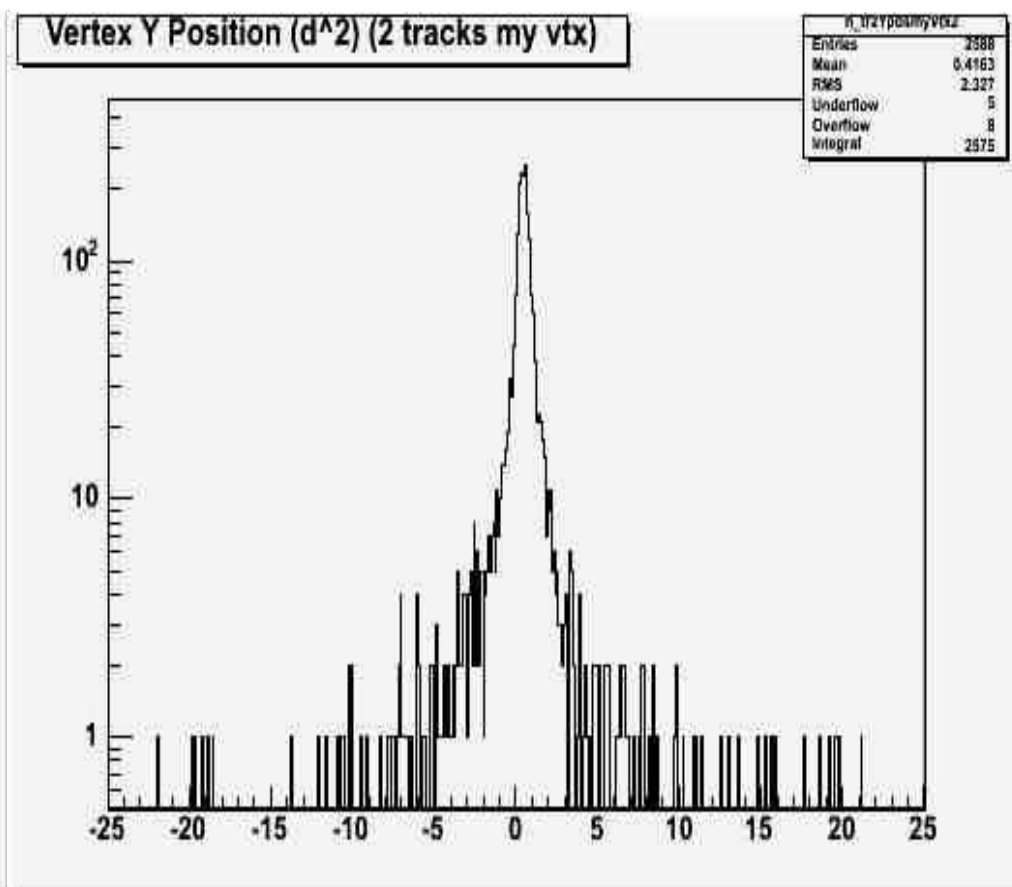


Y Vtx position (2 tracks)

old

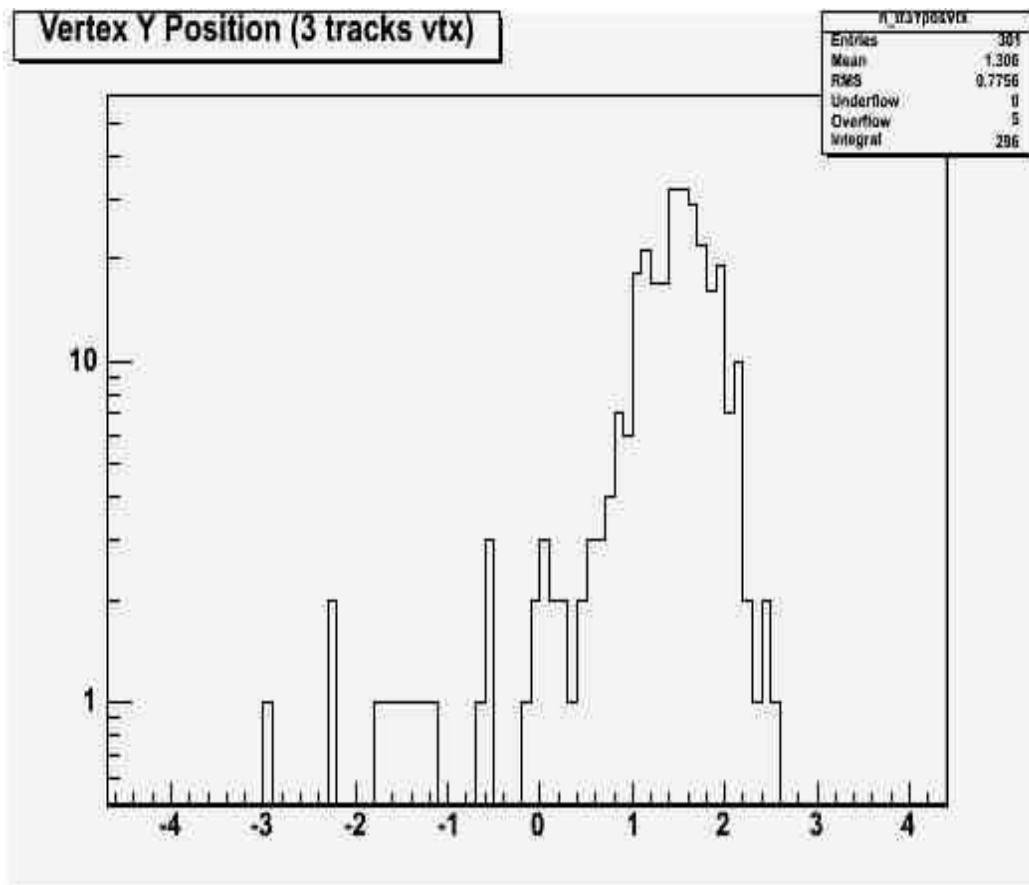


new

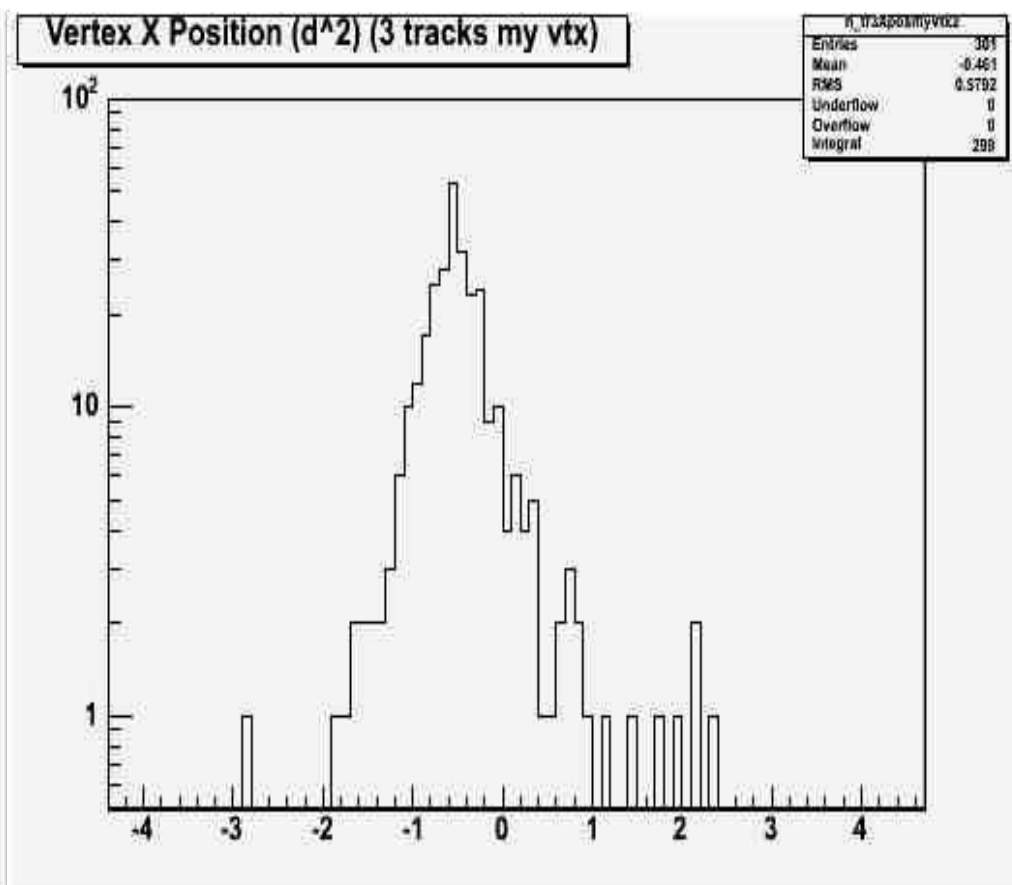


Y Vtx position (3 tracks)

old

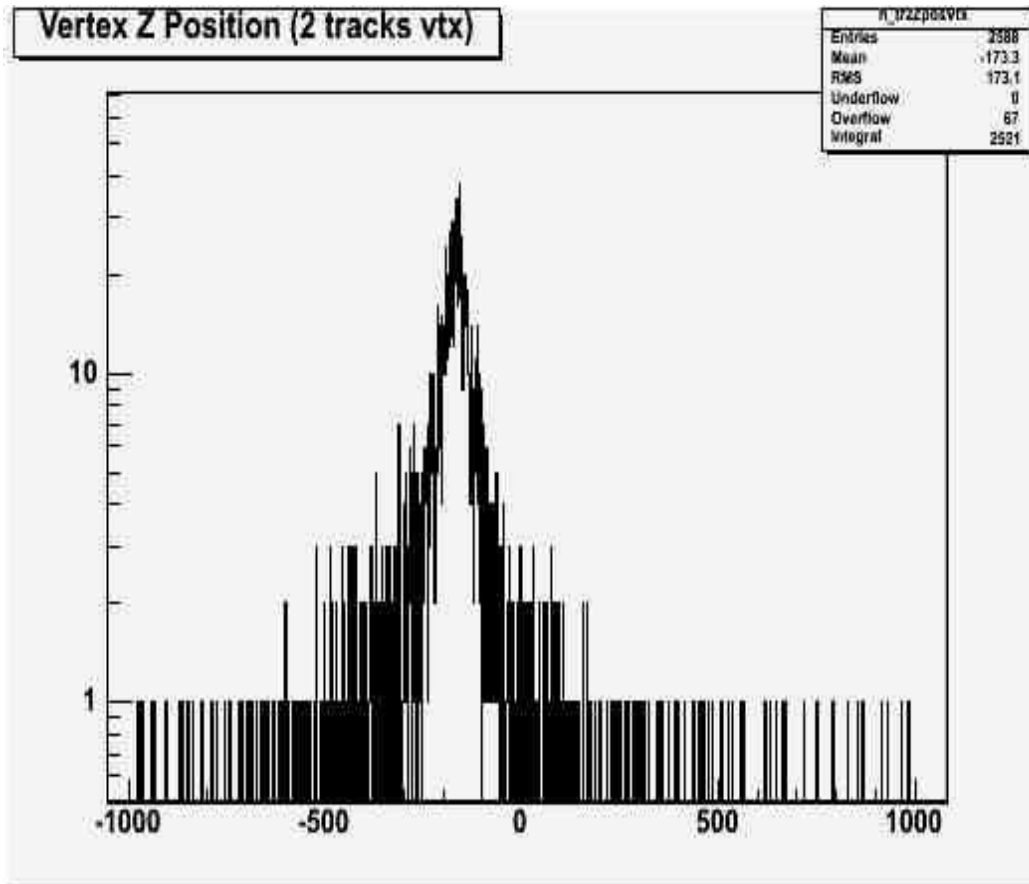


new

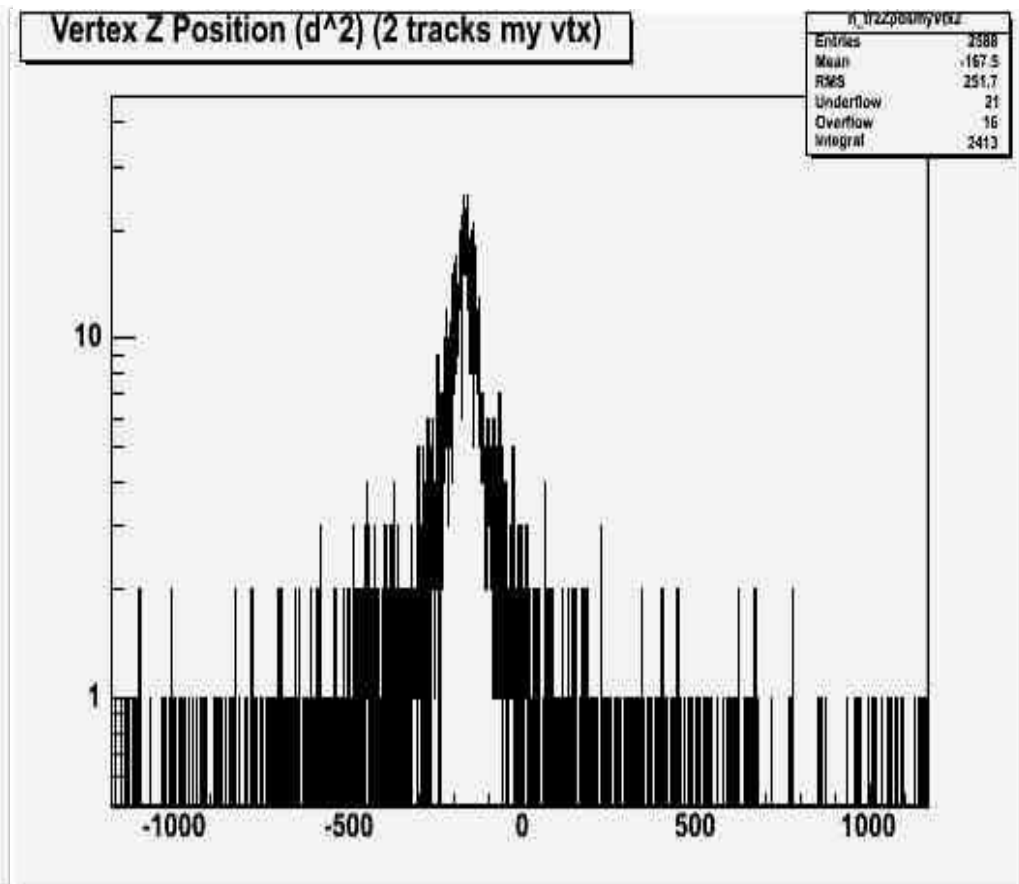


Z Vtx position (2 tracks)

old

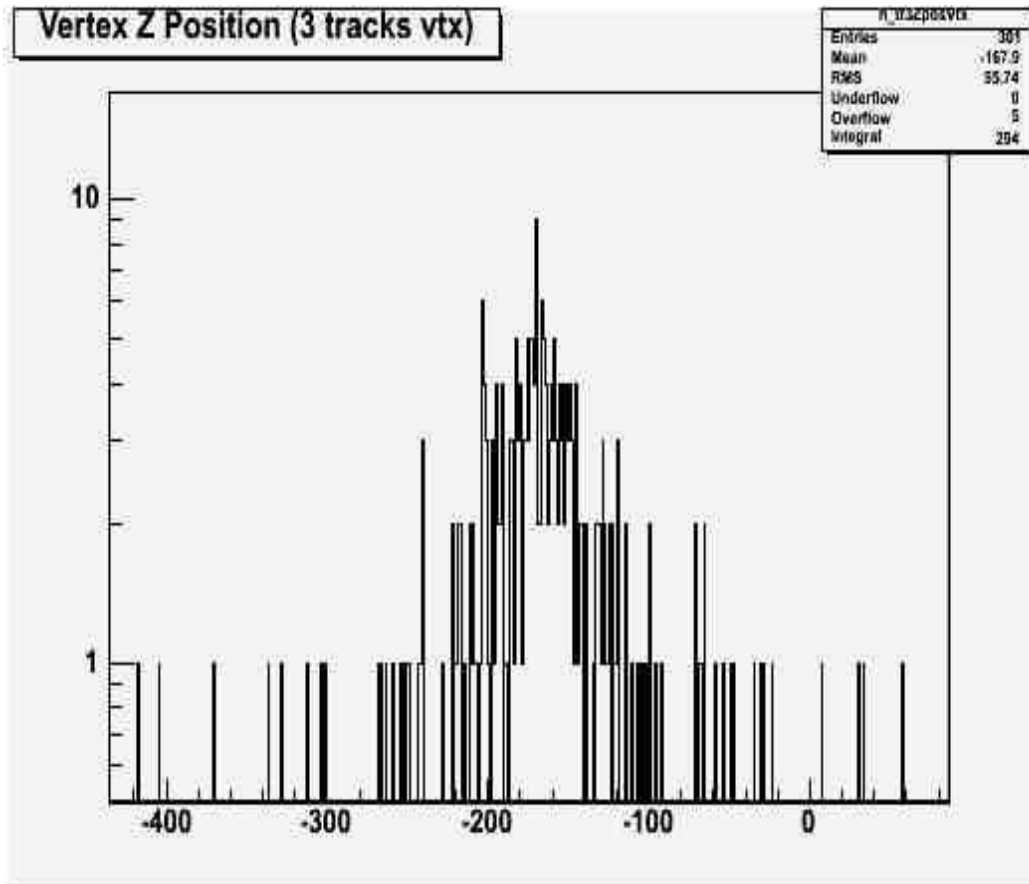


new

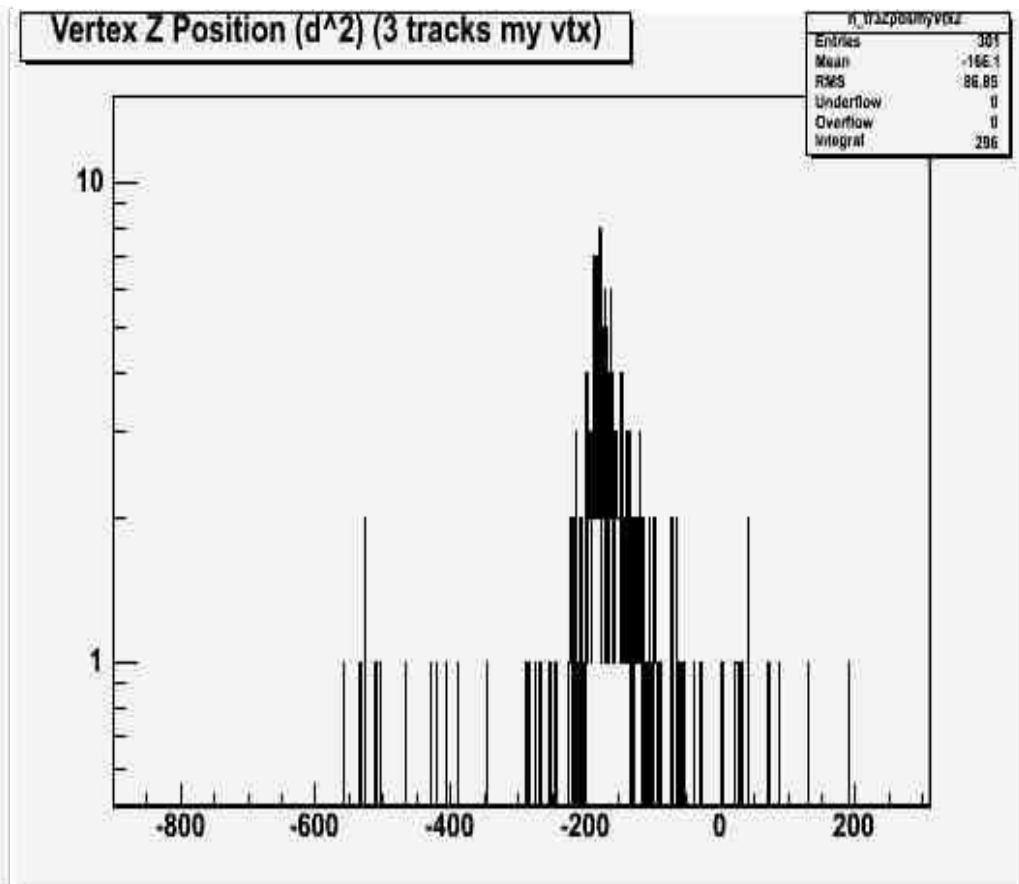


Z Vtx position (3 tracks)

old



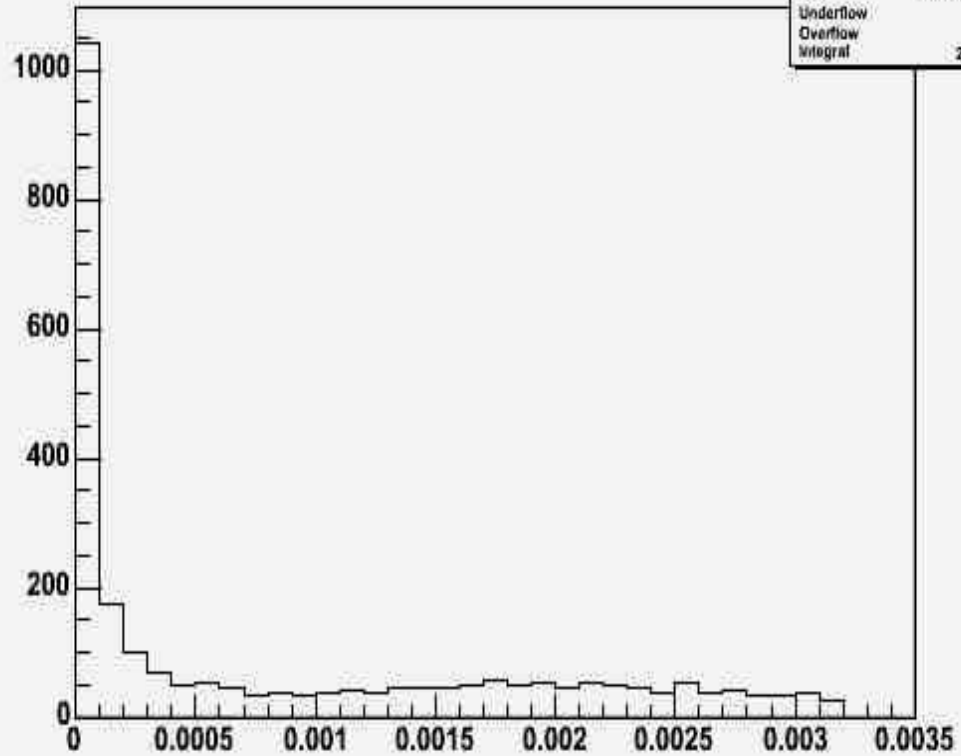
new



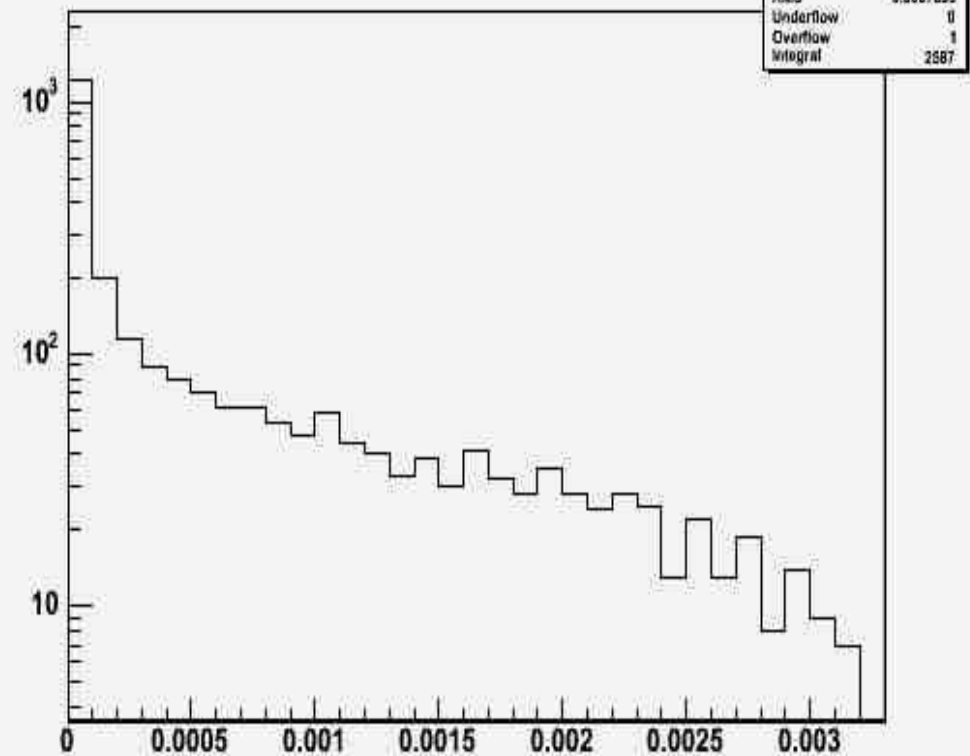
Other plots

DIST2 (2 tracks)

$\sqrt{d_0^2+d_1^2+d_2^2}$ (2 tracks my vtx)

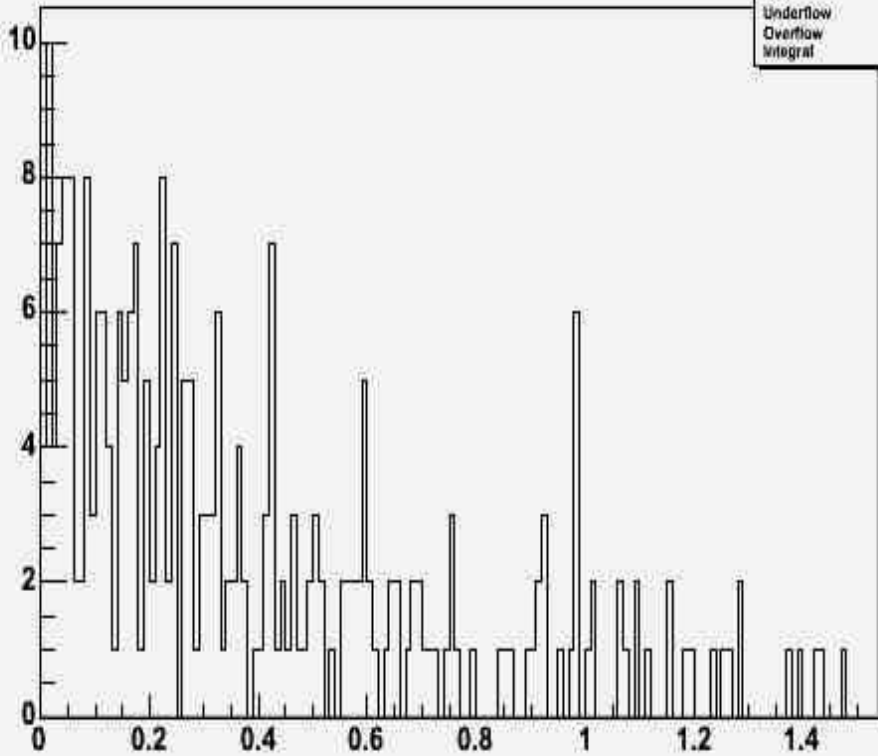


$\max(d_0^2,d_1^2,d_2^2)$ (2 tracks my vtx)



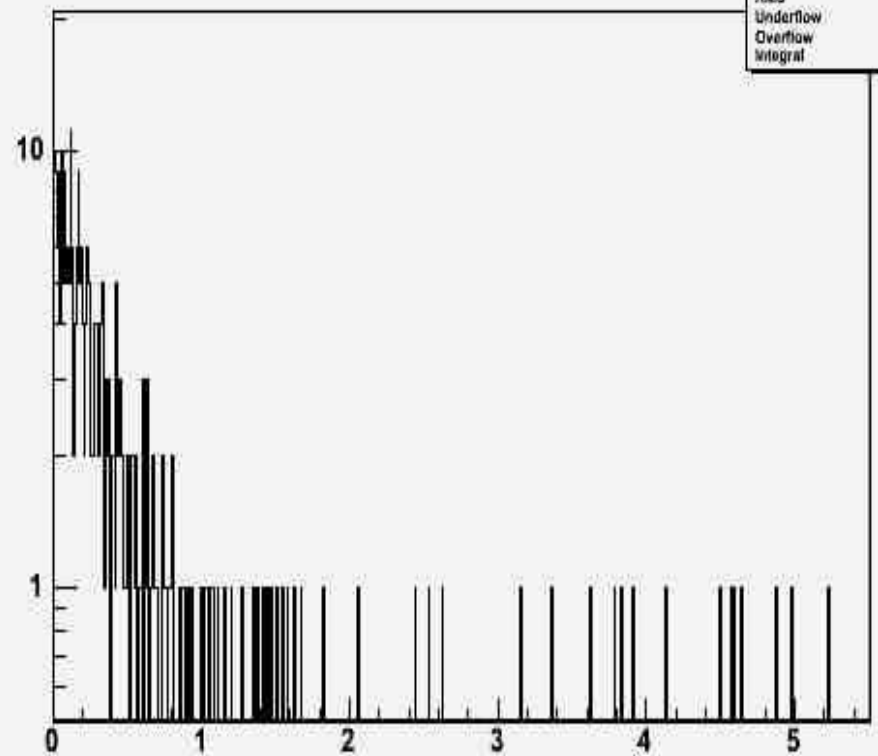
DIST2 (3 tracks)

$\sqrt{d_0^2+d_1^2+d_2^2}$ (3 tracks my vtx)



h_030DIST2	
Entries	301
Mean	0.3987
RMS	0.3664
Underflow	0
Overflow	0
Integral	268

$\max(d_0^2,d_1^2,d_2^2)$ (3 tracks my vtx)



h_030maxDIST2	
Entries	301
Mean	0.566
RMS	0.9267
Underflow	0
Overflow	0
Integral	301

Summary @ 07/12/05

	Standard Reco	My Reco
Track Efficiency	Worse	Better
Hit resolution	Equal(X), Worse(Y)	Equal(X), Better(Y)
Momentum resolution	Equal	Equal
Energy resolution	Under study	Under Study
Angular resolution	Under study	Under Study

Tests using $f = \sum \text{abs}(d_i)^2$ have been done

They show problems in the fit convergency.

This is due to geometrical reasons (no minimum for a linear function)