

2004 $e^+ e^-$ Test Beam @ Cern

(Status Report)

MEETING @ UNIGE

08/02/2006

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•Improved MC Statistics

Data Sample

(limited statistics)

Layer Efficiency
and
Hit Resolution

Momentum
Resolution

Photon Energy
and
Angular Resolution

Run	Energy	Trigger	Magnet	Converter	S/N cut	# Events
1210	5 GeV	BC1C2*	OFF	OFF	4	20000
1461	7 GeV	BC1C2	ON	OFF	4	19000
1470	5 GeV	BC1C2	ON	ON	4	19000

Montecarlo Sample

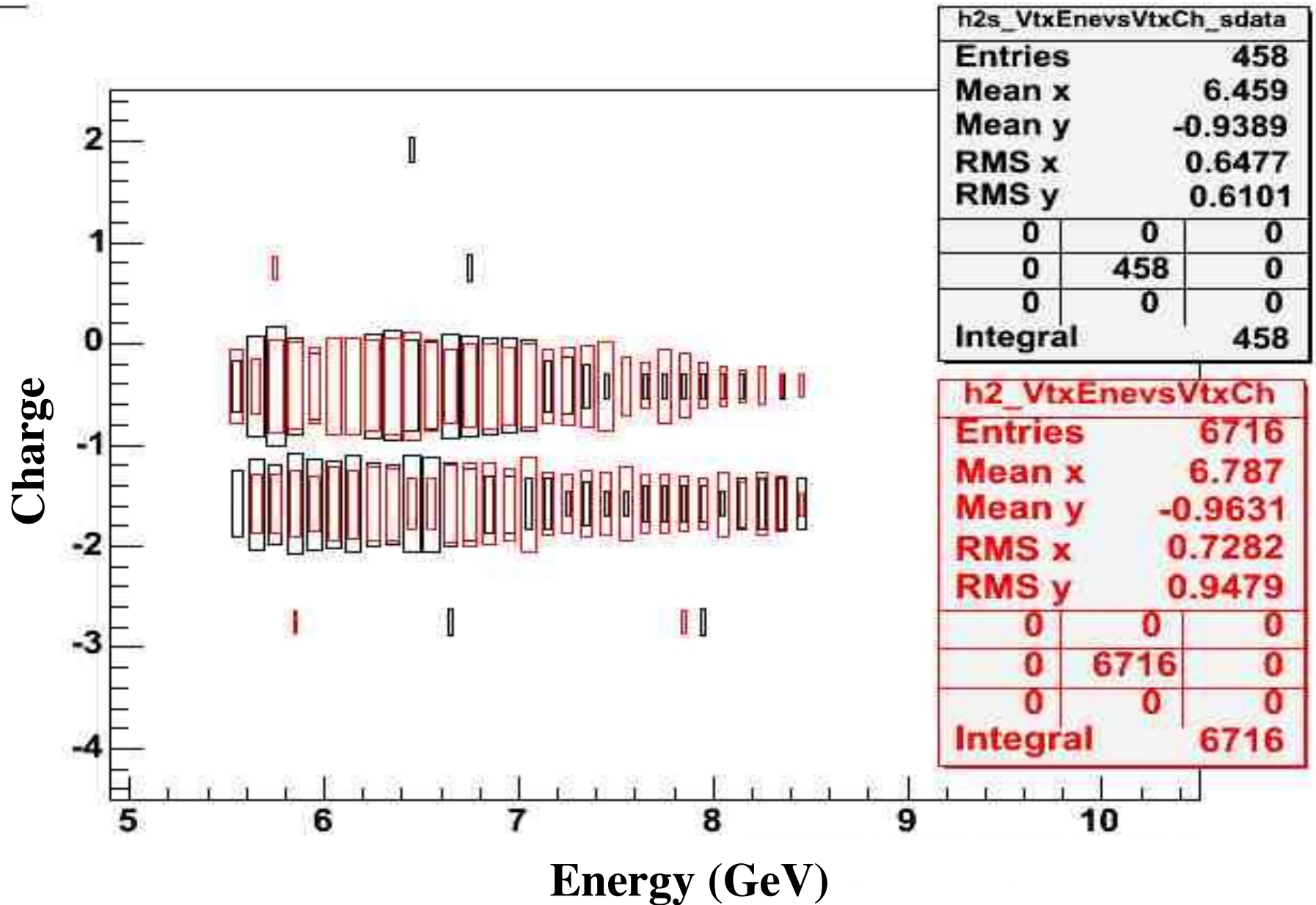
(data statistics X 10)

Energy	Trigger	Magnet	Converter	# Events
5 GeV	BC1C2	OFF	OFF	200000
7 GeV	BC1C2	ON	OFF	200000
7 GeV	BC1C2	ON	ON	200000

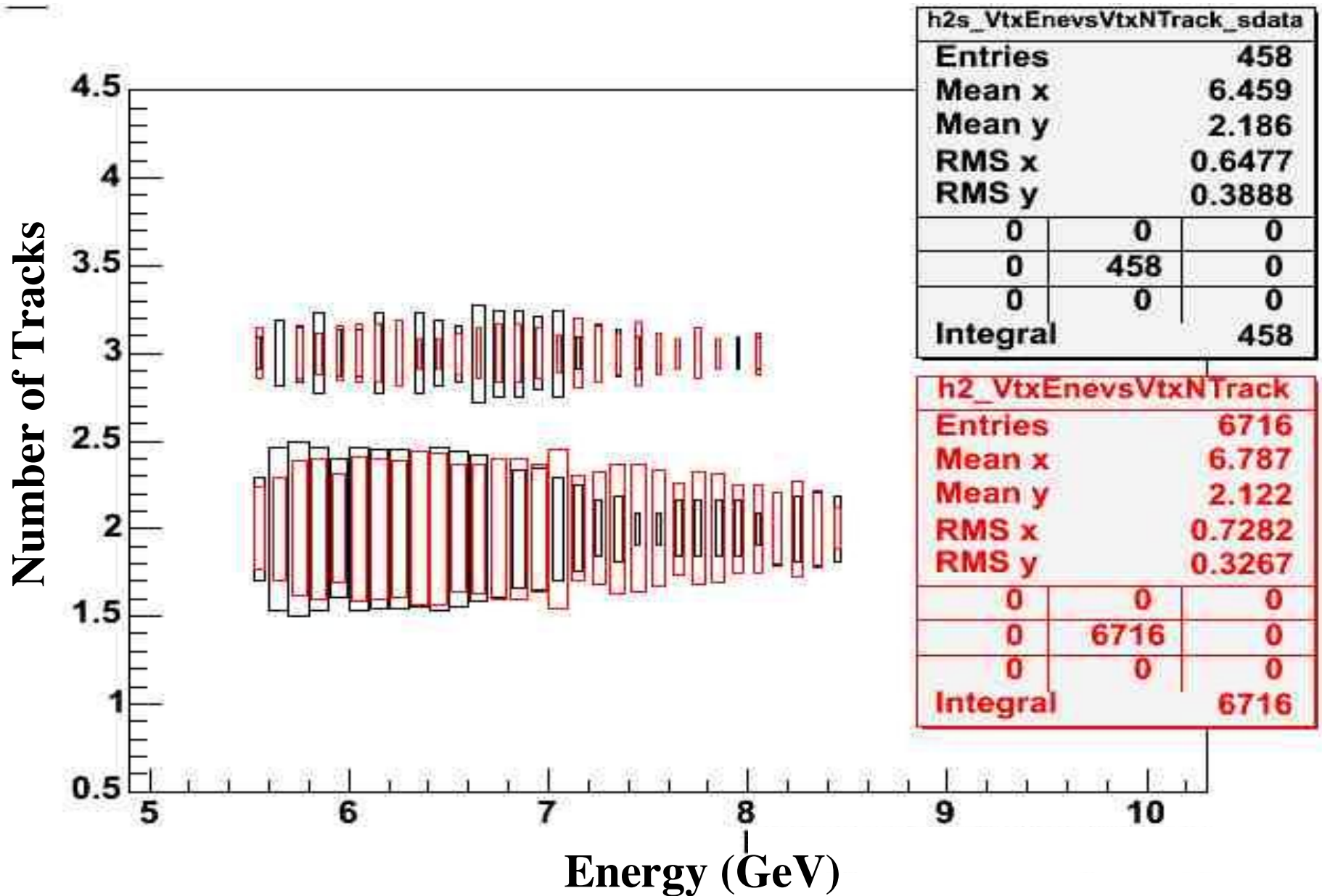
* BC1C2 => electrons

Vertex distributions

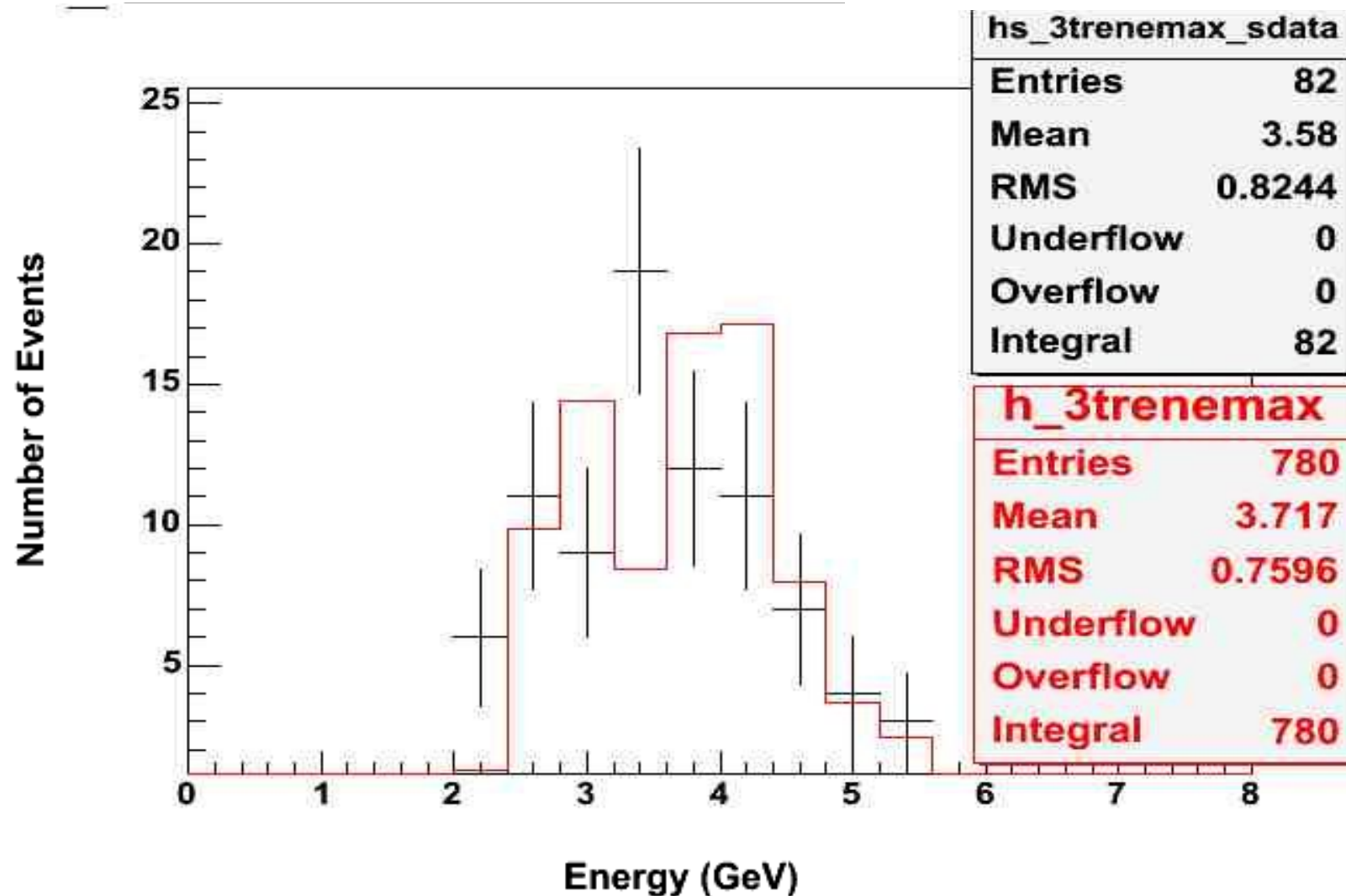
Vertex energy vs Vertex charge



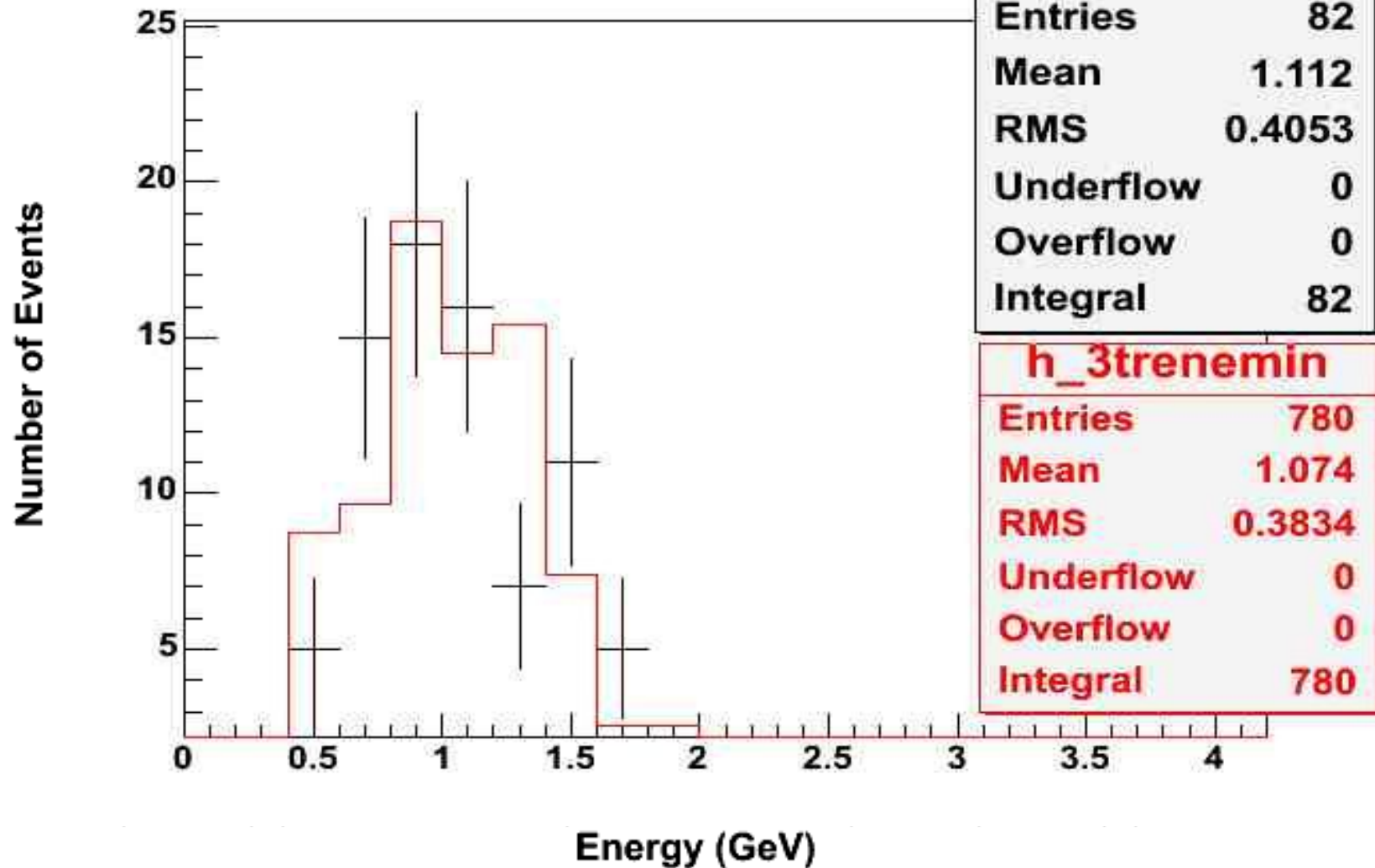
Vertex energy vs Vertex ntracks



3 Tracks Vertex: most energetic electron

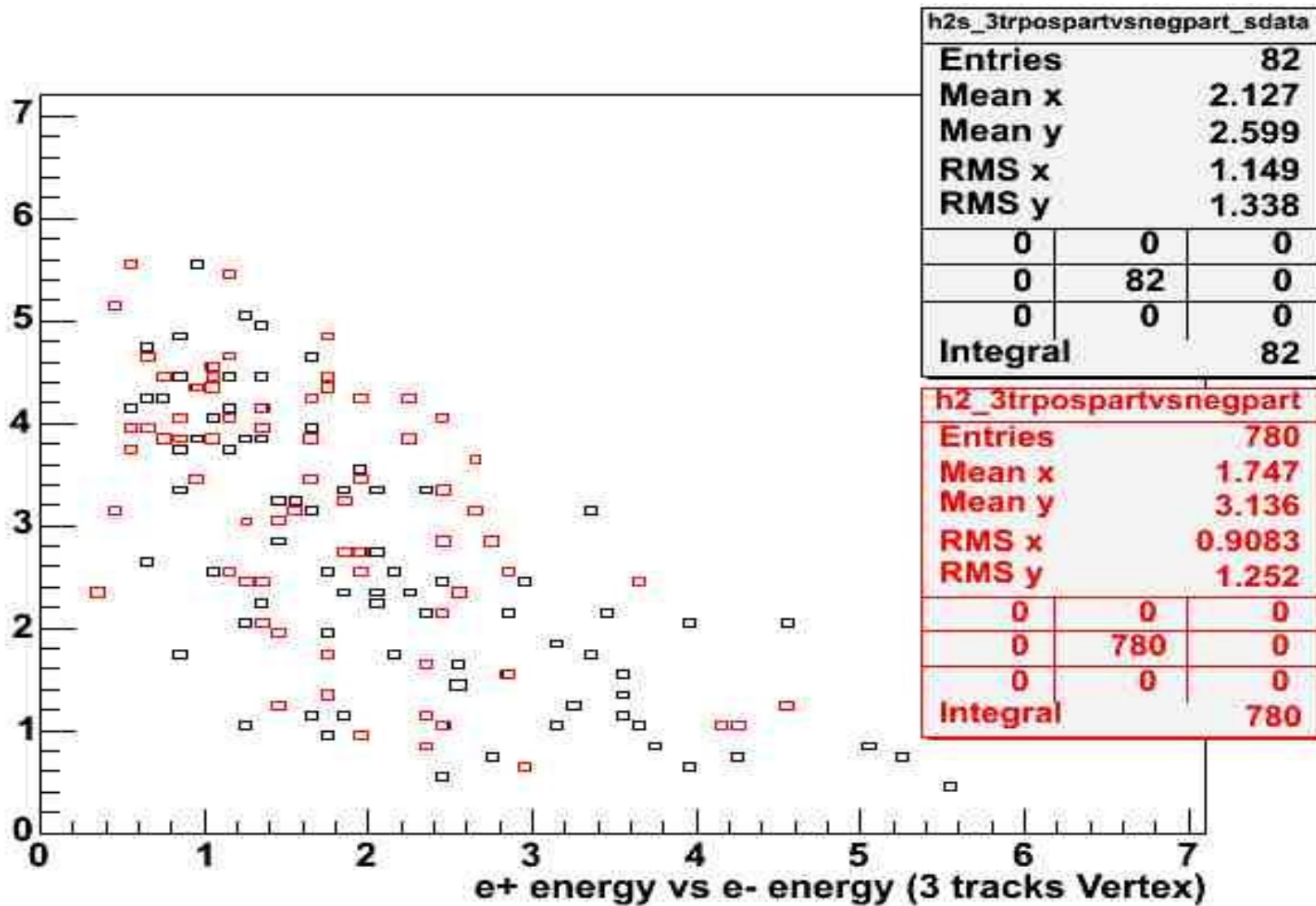


3 Tracks Vertex: least energetic electron



3track Vertex: Positron vs Electron Energy

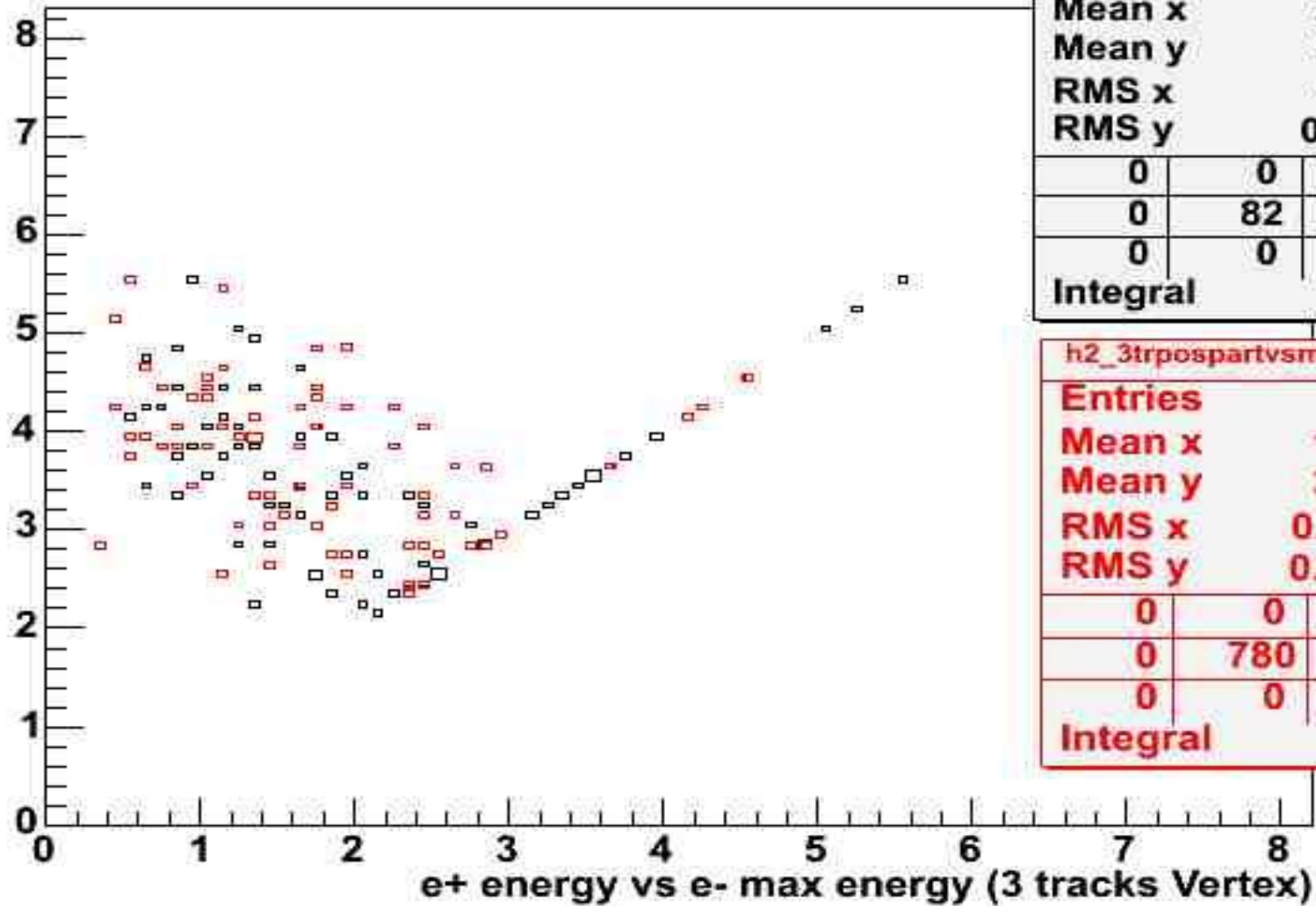
Electron Energy (GeV)



Positron Energy (GeV)

3track Vertex: Positron vs Most energetic Electron

Most energetic Electron (GeV)



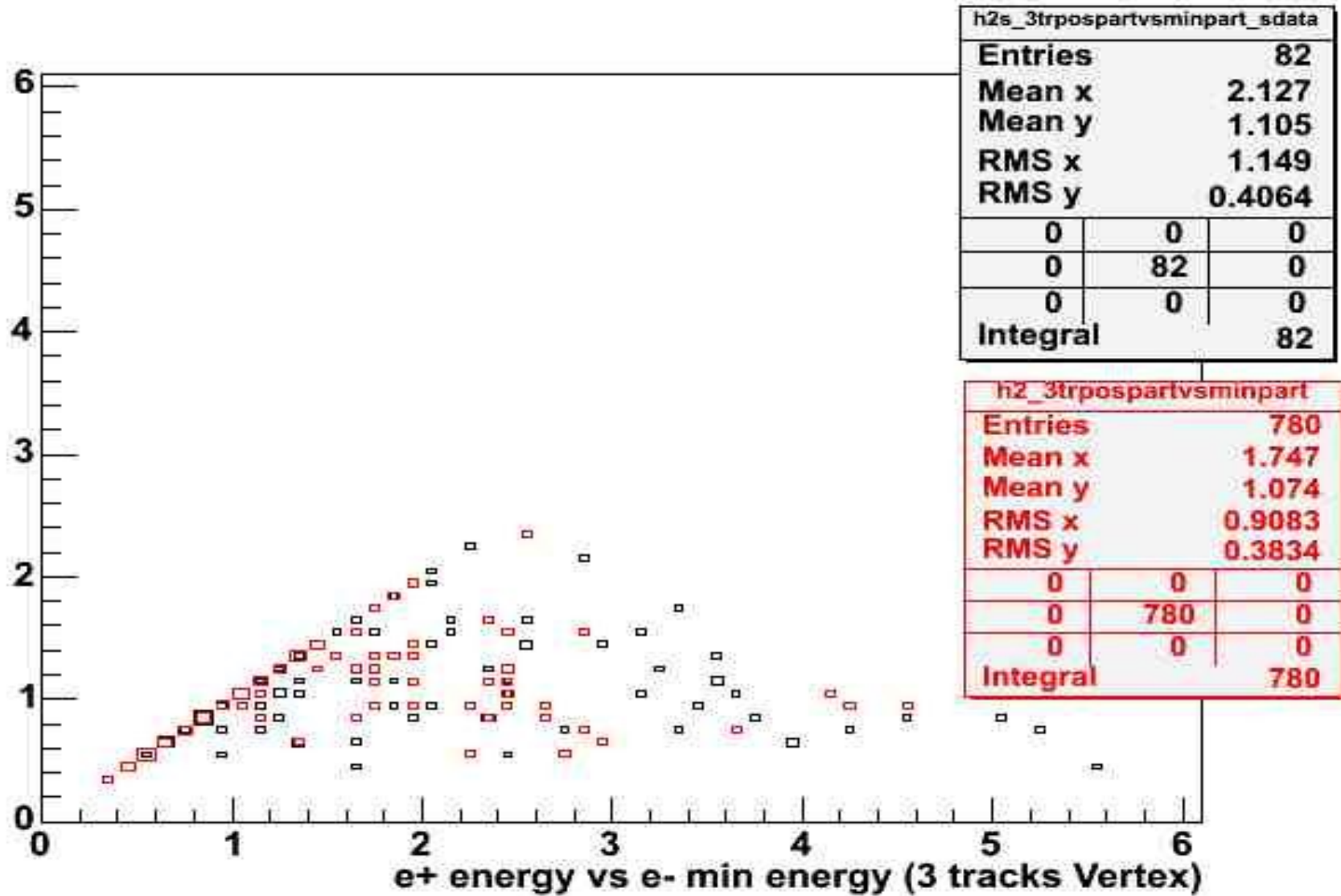
h2s_3trpospartvsmaxpart_sdata		
Entries	82	
Mean x	2.127	
Mean y	3.578	
RMS x	1.149	
RMS y	0.8201	
0	0	0
0	82	0
0	0	0
Integral	82	

h2_3trpospartvsmaxpart		
Entries	780	
Mean x	1.747	
Mean y	3.717	
RMS x	0.9083	
RMS y	0.7596	
0	0	0
0	780	0
0	0	0
Integral	780	

Positron Energy (GeV)

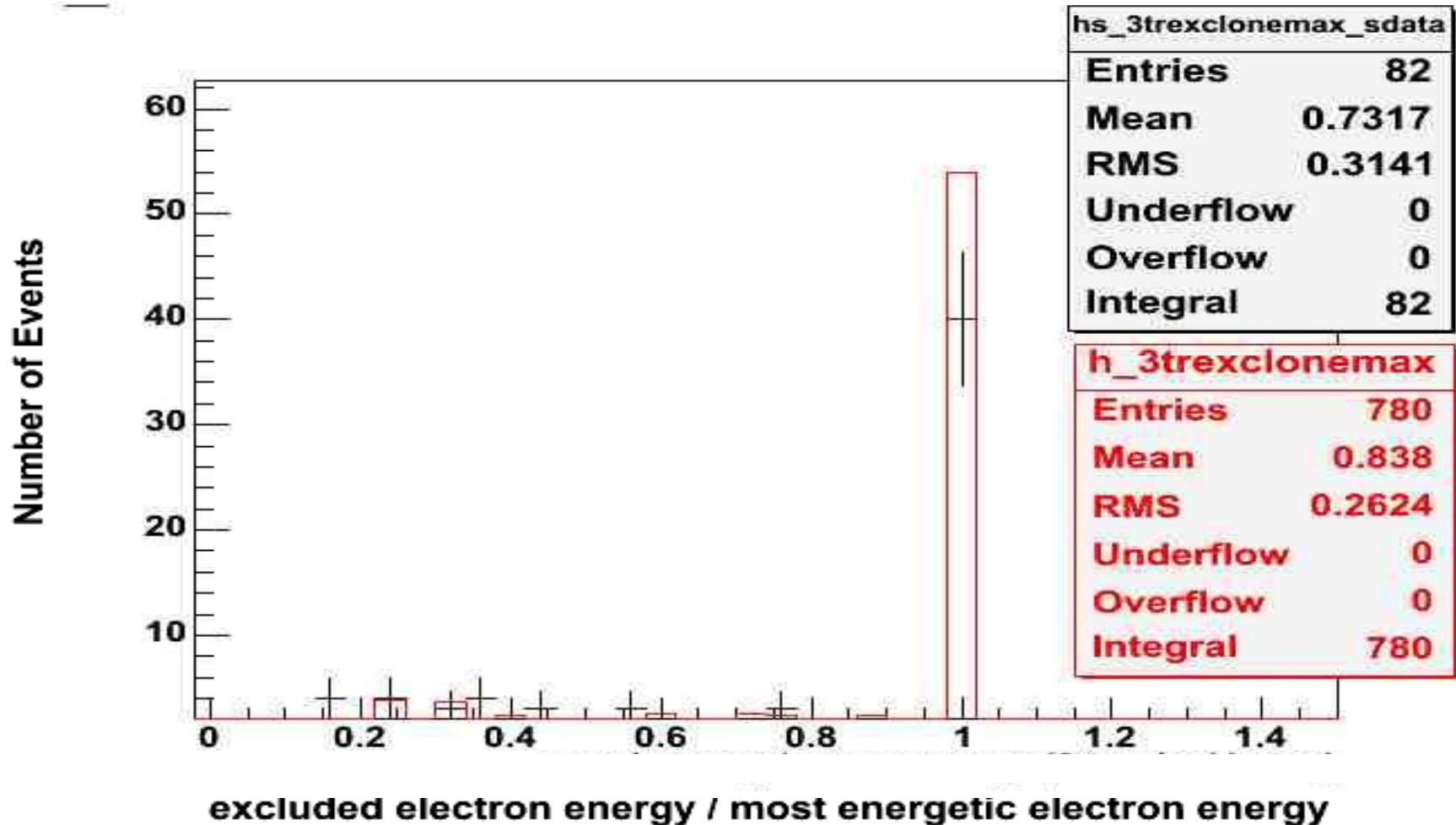
3track Vertex: Positron vs Least energetic Electron

Least energetic Electron (GeV)



Positron Energy (GeV)

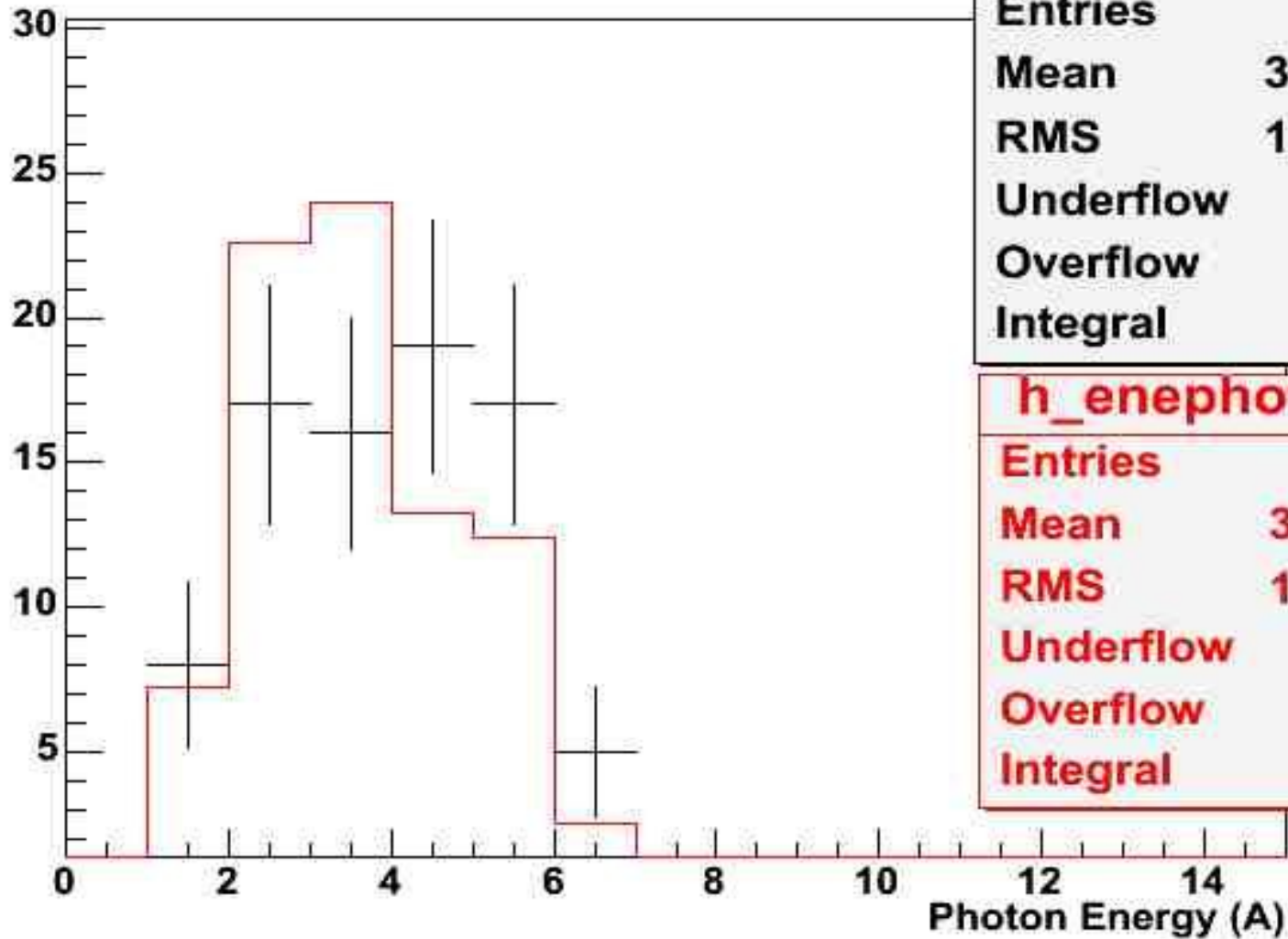
3 Tracks Vertex:



In order to perform the direct reconstruction of the photon, positrons and electrons are paired asking for the minimal invariant mass of the combination. The lasted electron is flagged as “**excluded**”

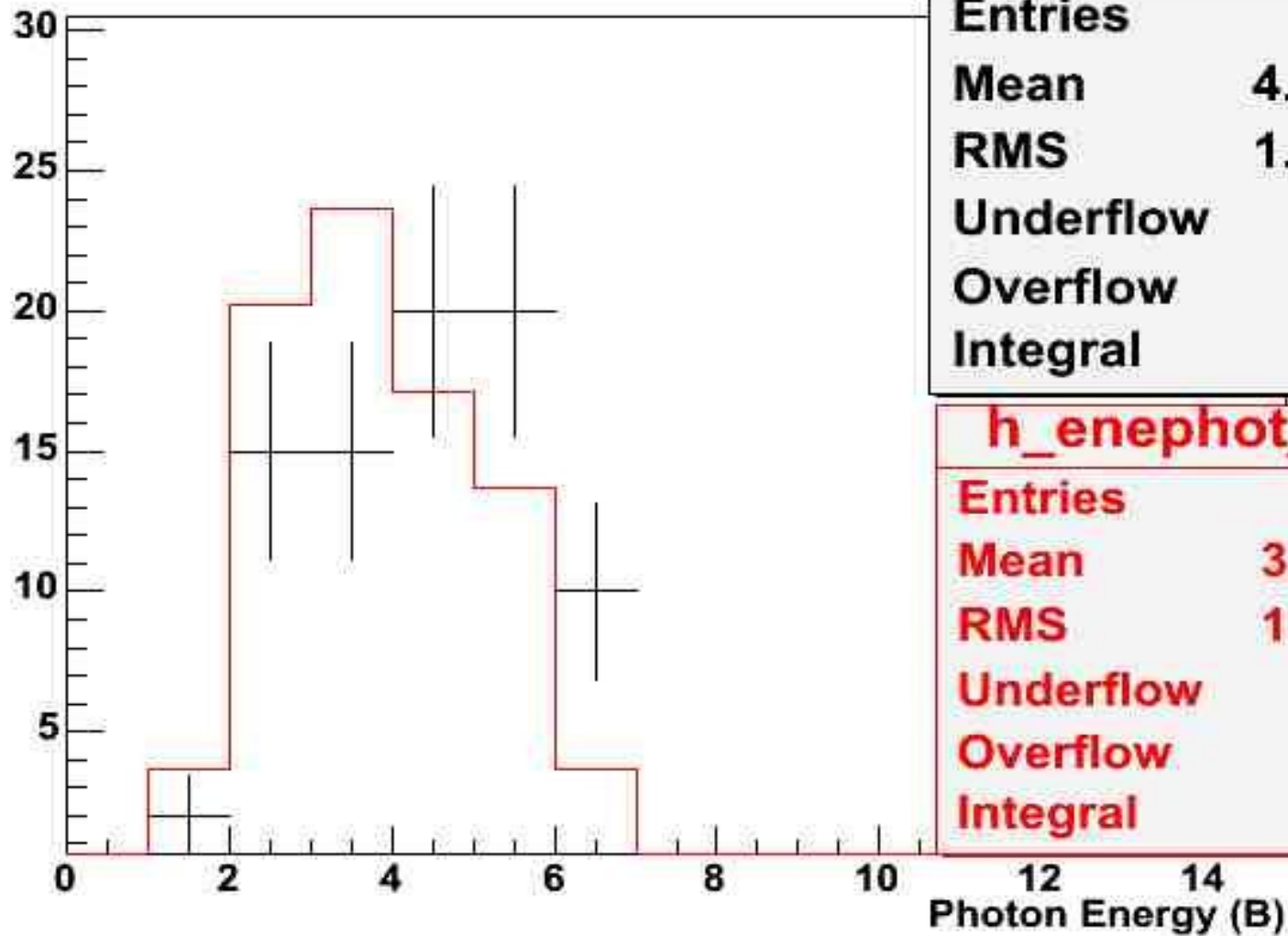
Photon Energy (direct reco)

Photon Energy (A)

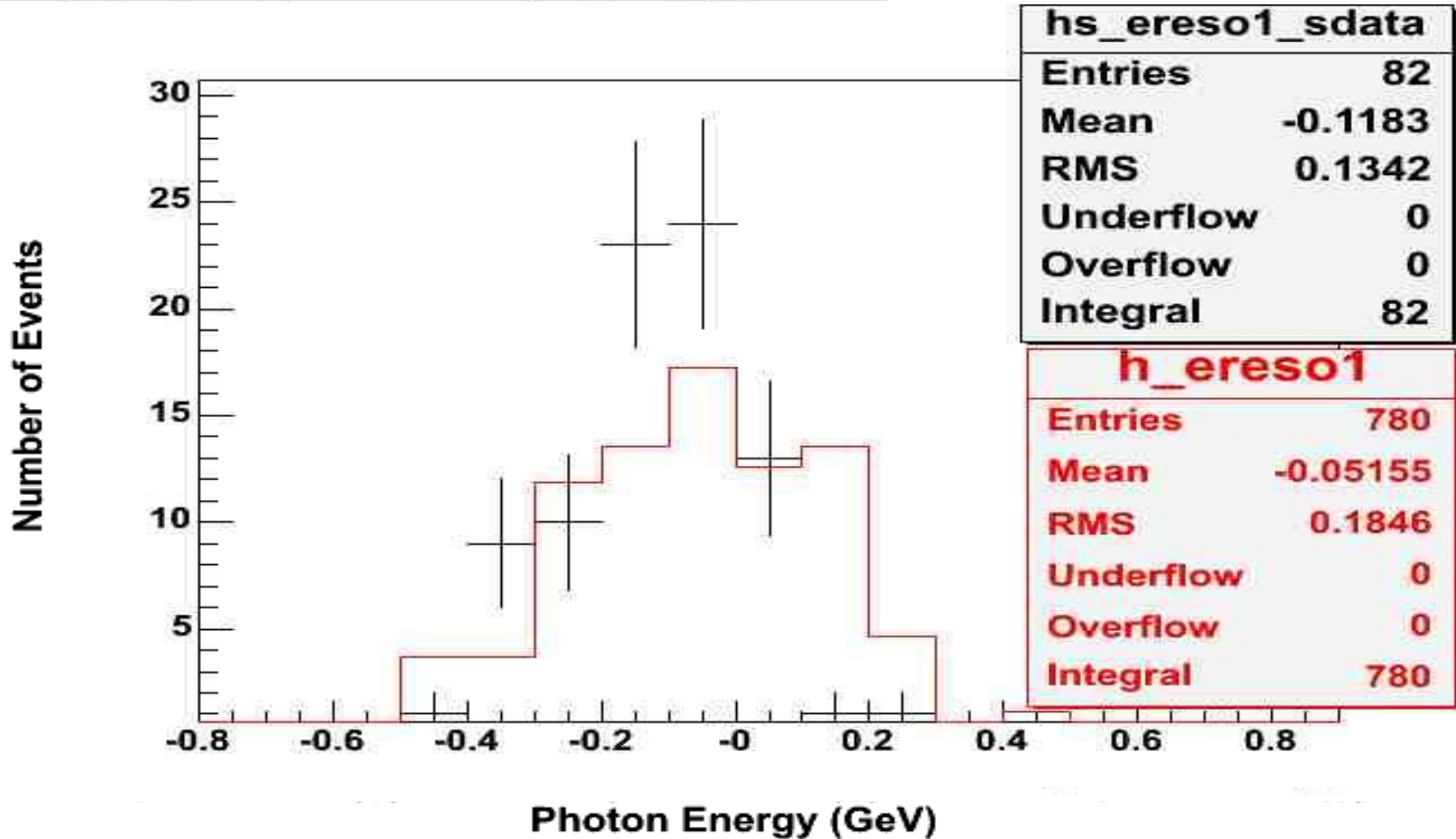


Photon Energy (indirect reco)

Photon Energy (B)



Photon Energy resolution



Definition:

Photon Energy (A)-Photon Energy (B)

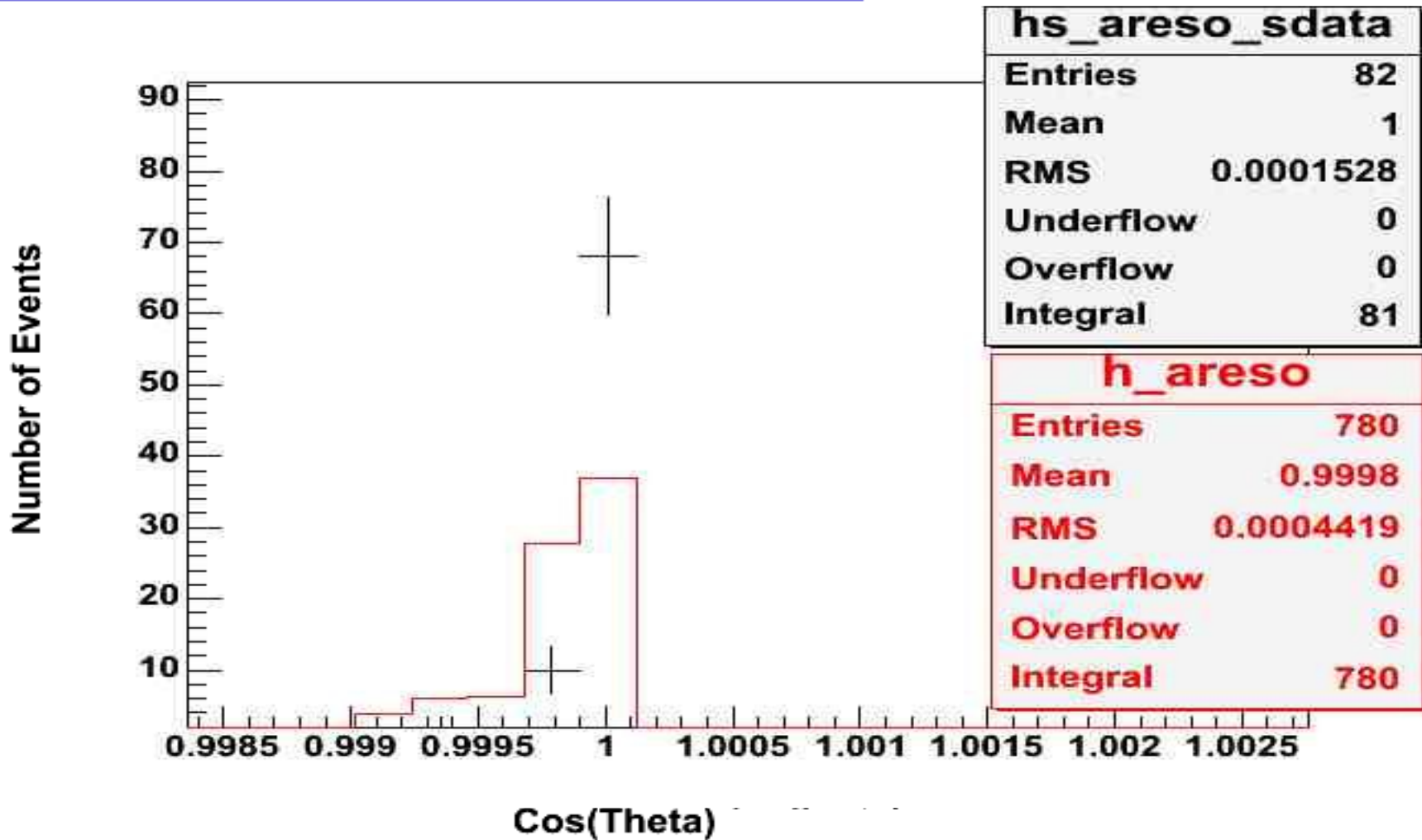
Photon Energy (B)

where

A -> direct reco (pair)

B -> indirect reco

Photon Angular resolution



Definition:

$$\cos(\Delta \theta) = \frac{p_A \cdot p_B}{|p_A| |p_B|}$$

where

A -> direct reco (pair)

B -> indirect reco

p -> photon momentum