Studies of Silicon Forward Tracking Efficiency

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Status :

- efficiency for forward-tracks using KalSiliconStandalone-Strategy is low
- Phoenix-Electrons find more tracks
- ISL information is now available

$\Rightarrow$ opportunity to investigate

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How to check :

- run normal ProductionExe from release 5.2.0
- use a selection of events with identified Phoenix-Electrons in $Z \rightarrow ee$
  (from Beate : zee-phx-nosi.dst)
- select the hits of the best track of each Phoenix-Electron
- run KalSiliconStandaloneTracker with them
- select findable tracks
- compare the numbers

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Tracks

All	Possible	Nominate	Candidate	Found
275	197	157	91	68
%	0.72	0.57	0.33	0.25

Standalonetracking : 0.75

	2 Hit3D	Nominate	Candidate	Found
	102	73	28	23
				0.82

possible : min(5 hits & 2 hits3D & vertex)

nominate : cut1 on z, pt

candidate : in tracking after cut2 on z, pt

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With additional vertices from ZVertexCollection

	All	Possible	Nominate	Candidate	Found
Tracks	275	209	206	123	104
	%	0.76	0.75	0.45	0.38
				Standalonetracking :	0.85

	2 Hit3D	Nominate	Candidate	Found
	102	98	46	41
				0.89

possible : min(5 hits & 2 hits3D & vertex)

nominate : cut1 on z, pt candidate : in tracking after cut2 on z, pt

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With beam(x,y) from SVXbeam-database

	All	Possible	Nominate	Candidate	Found
Tracks	275	210	207	123	109
	%	0.76	0.75	0.45	0.4

Standalonetracking : 0.89

	2 Hit3D	Nominate	Candidate	Found
	102	98	46	42
				0.91

possible : min(5 hits & 2 hits3D & vertex)

nominate : cut1 on z, pt

candidate : in tracking after cut2 on z, pt

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In KalSiliconStandaloneTracker

Cut 1 :

$\Delta z < 5cm$ (tcl-switch)

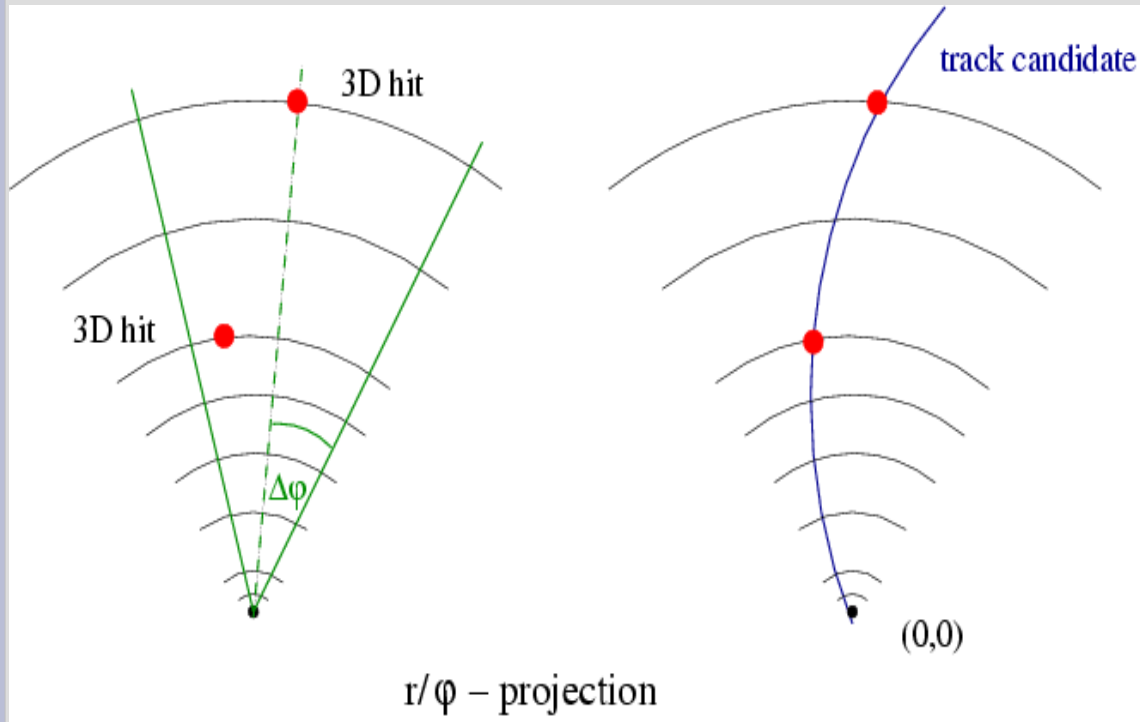
$\Delta phi < \pi/20$ (~ pT > 50 MeV)

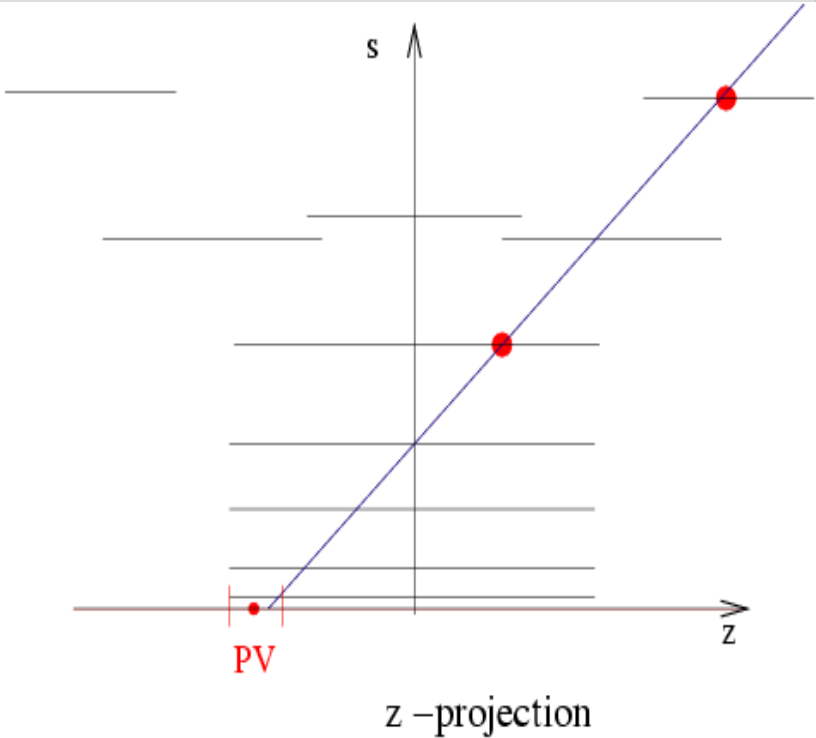
Cut 2 :

$\Delta z < 0.8cm$ (tcl-switch)

$\eta < 4$

pT > 0.2 GeV (tcl-switch)





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Tracks

All	Possible	Nominate	Pvz cut 2	Candidate	Found	
275	210	204	0.8 cm	123	109	
	0.76	0.74		0.45	0.4	%
					0.89	%
			1.6 cm	181	162	
				0.66	0.59	%
					0.9	%
			2.0 cm	188	169	
				0.68	0.61	%
					0.9	%

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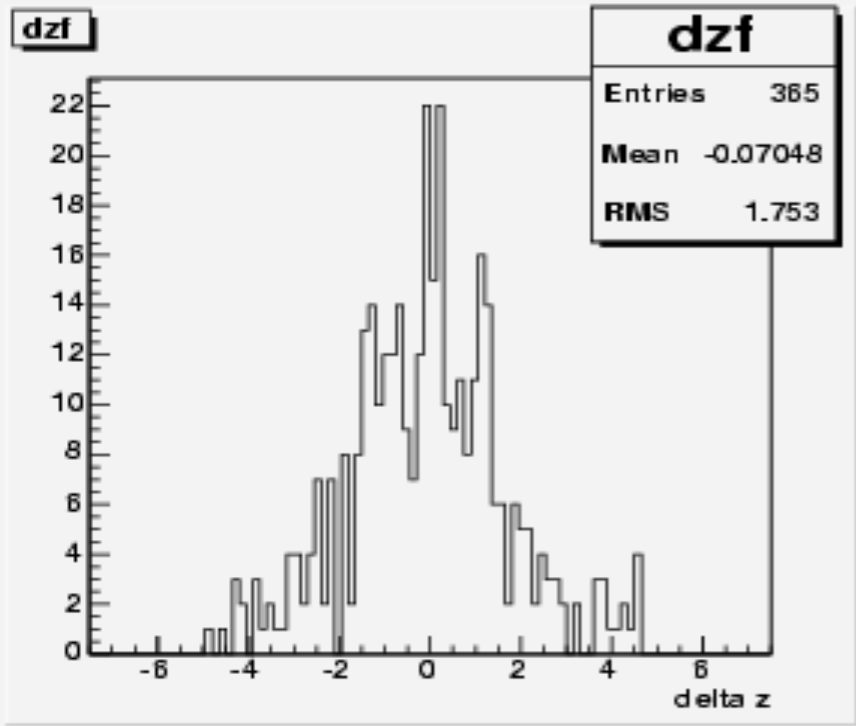
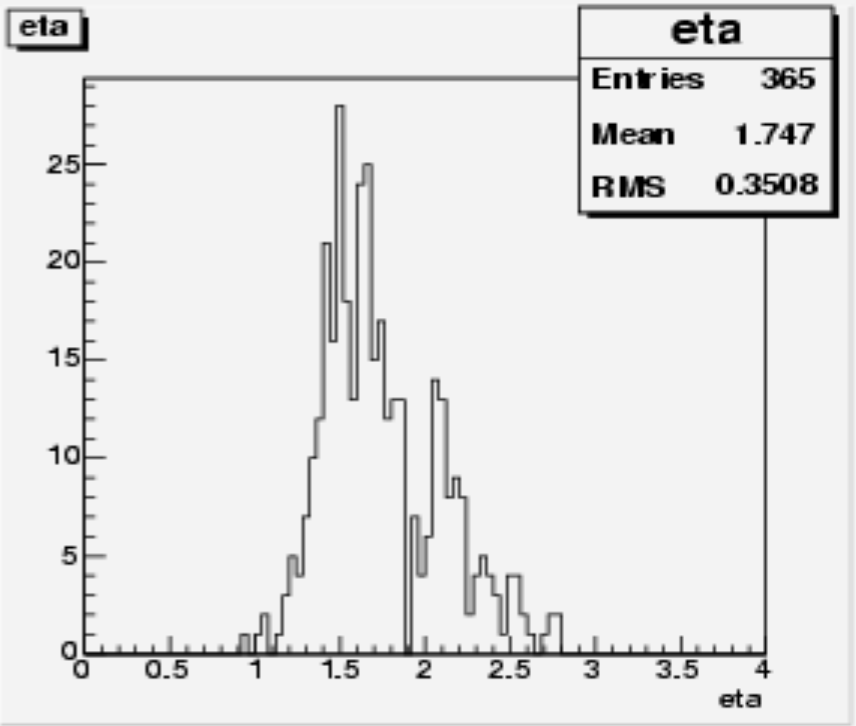
Done

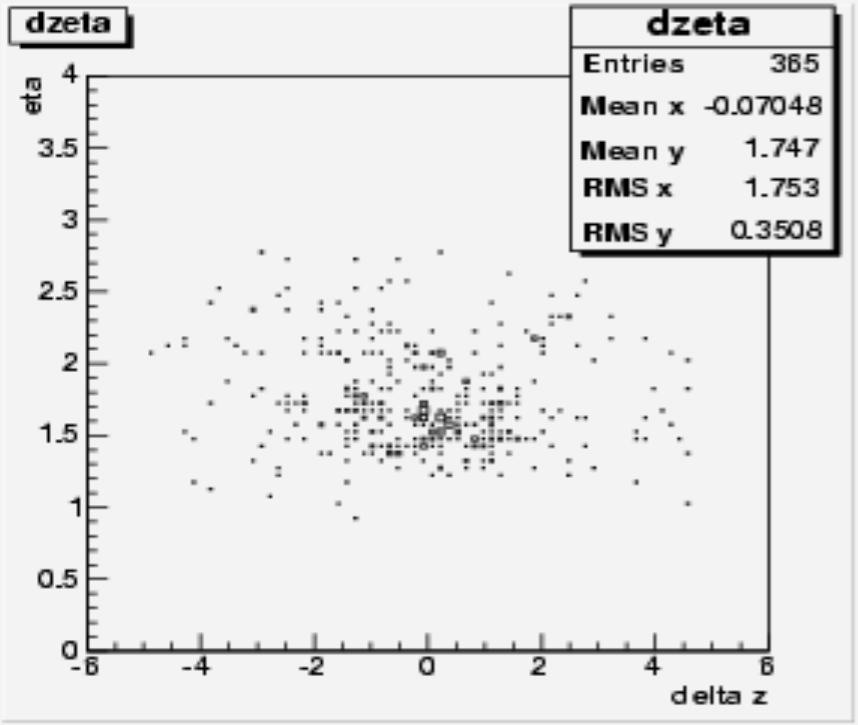
- added vertices from ZvertexCollection
- call SVXBeam-Database for each run
- change 2. z-cut (by tcl-switch) for higher efficiency

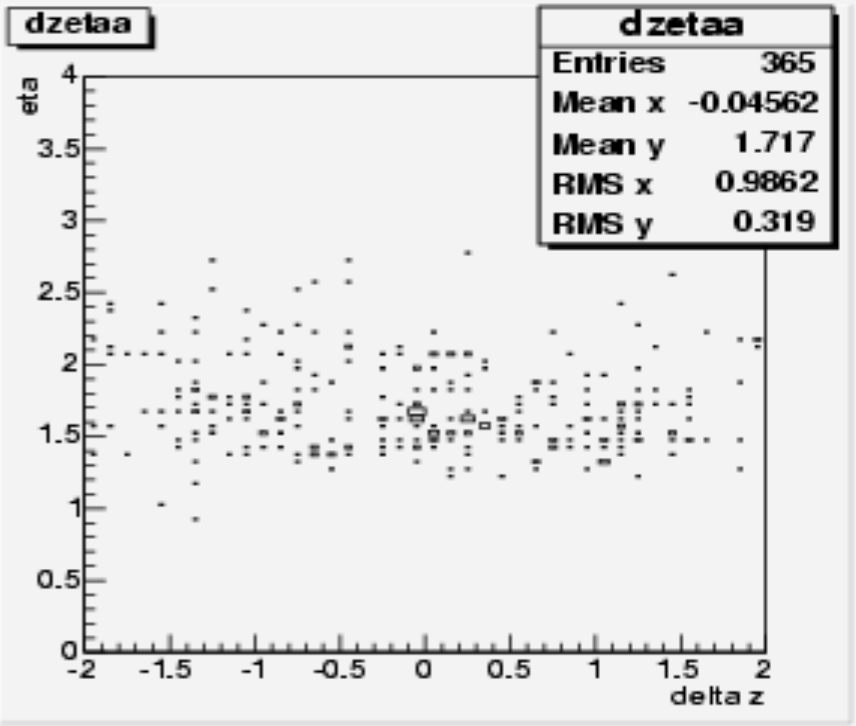
To Do

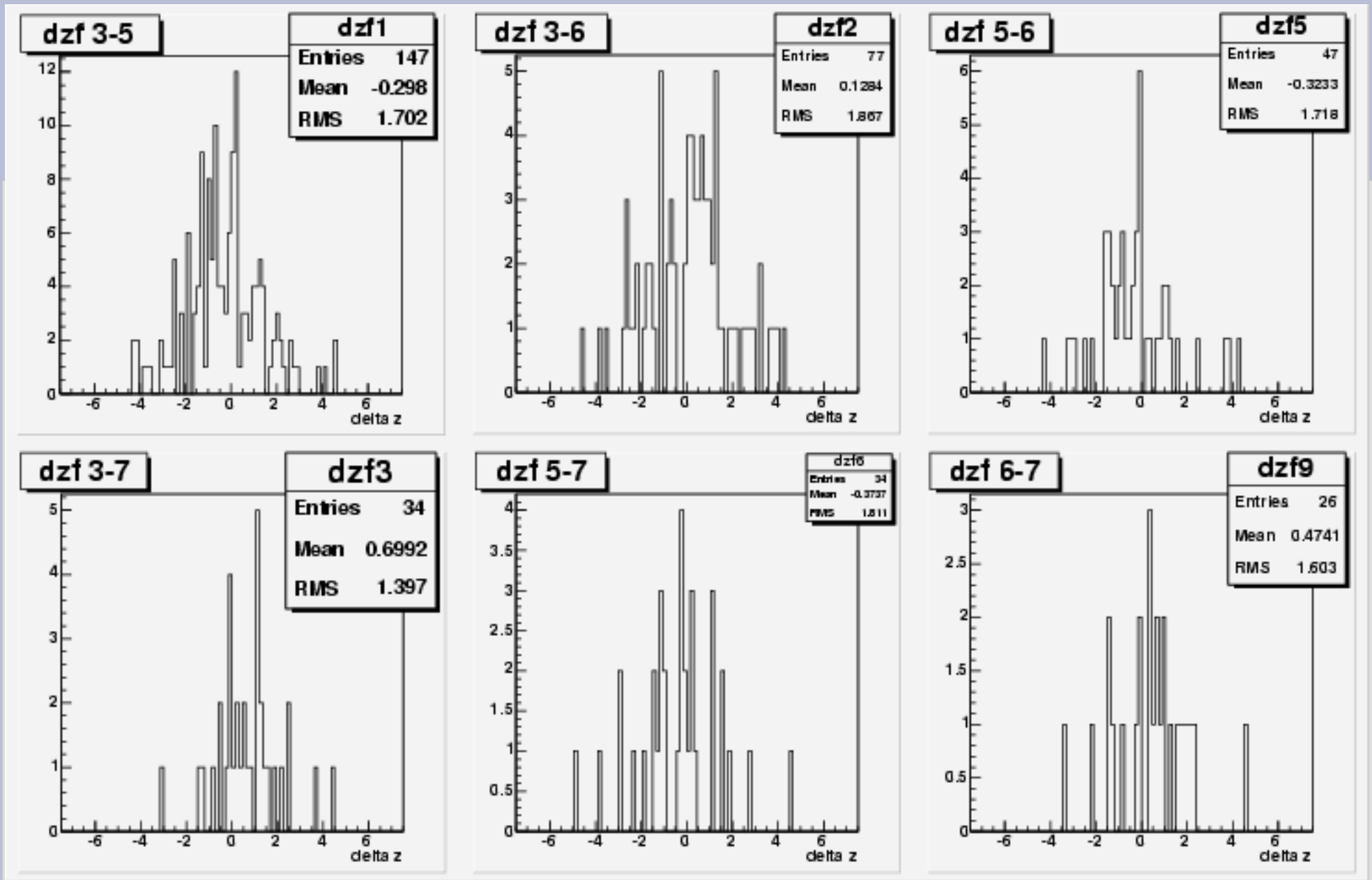
- implement z-cut depending on η
- call SVTBeamposition for each event (L3-Trigger)
- run tracking with all hits
- look to the timing (higher combinatorics)
- commit all to the repository


dzf
dzf
Entries 365
Mean -0.07048
RMS 1.753
delta z


eta
eta
Entries 365
Mean 1.747
RMS 0.3508
eta


dzeta
dzeta
Entries 365
Mean x -0.07048
Mean y 1.747
RMS x 1.753
RMS y 0.3508
eta
delta z


dzetaa
dzetaa
Entries 365
Mean x -0.04562
Mean y 1.717
RMS x 0.9862
RMS y 0.319
eta
delta z


dzf 3-5
dzf1
Entries 147
Mean -0.298
RMS 1.702
delta z
dzf 3-6
dzf2
Entries 77
Mean 0.1284
RMS 1.867
delta z
dzf 5-6
dzf5
Entries 47
Mean -0.3233
RMS 1.718
delta z
dzf 3-7
dzf3
Entries 34
Mean 0.6992
RMS 1.397
delta z
dzf 5-7
dzf6
Entries 34
Mean -0.3737
RMS 1.611
delta z
dzf 6-7
dzf9
Entries 26
Mean 0.4741
RMS 1.603
delta z