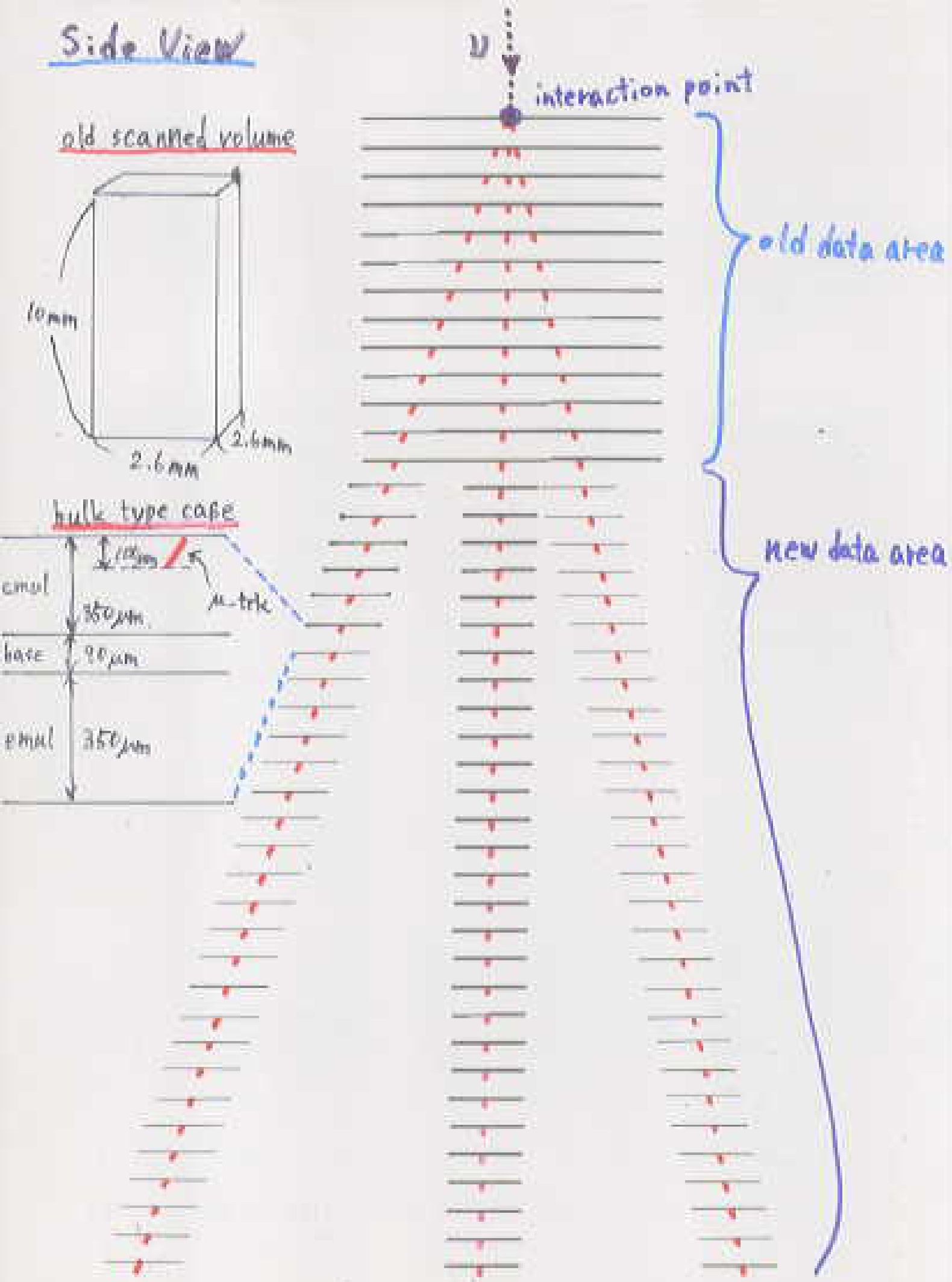
Long Flight Decay Search

Takahashi (Nagoya Univ.)


Side View
old scanned volume
10mm
2.6mm
2.6mm
bulk type case
μ-trk
350μm
90μm
350μm
ν
interaction point
old data area
new data area

handling data condition

module	construction	ν int. event	1ry trk	<1ry trk> / ν int. event
1	ecc200 + Fe	79	362	4.6
2	ecc800 + Fe bulk	77	344	4.5
3	ecc200 + Fe	40	173	4.3
4	ecc200 + Fe ecc800 + Fe bulk x2 + Fe bulk	39	157	4.0
5	ecc800 + Fe bulk	42	156	3.7
7	ecc800 + Fe bulk	68	285	4.2
8	bulk	54	189	3.5
total		399	1666	4.2

The number of 1666 trks are scanned by TrackSelecter ($\theta < 0.4$).

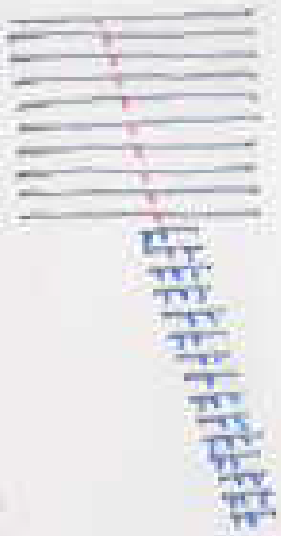
1666 trks occupy 80% of real 1ry trk numbers.

→ estimated by Komatsu

followed down data of 1666 1ry trks

→ made by Nonaka

Followed down data was taken toward 1666 1ry trks



reconstruction →

good connection trk : 20%

bad connection trk : 80%

It is difficult to connect covering several tens plates by ~~manual~~ auto

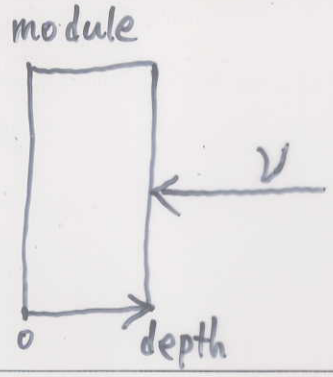
Using 3D Viewer, bad connection trks were connected by manual

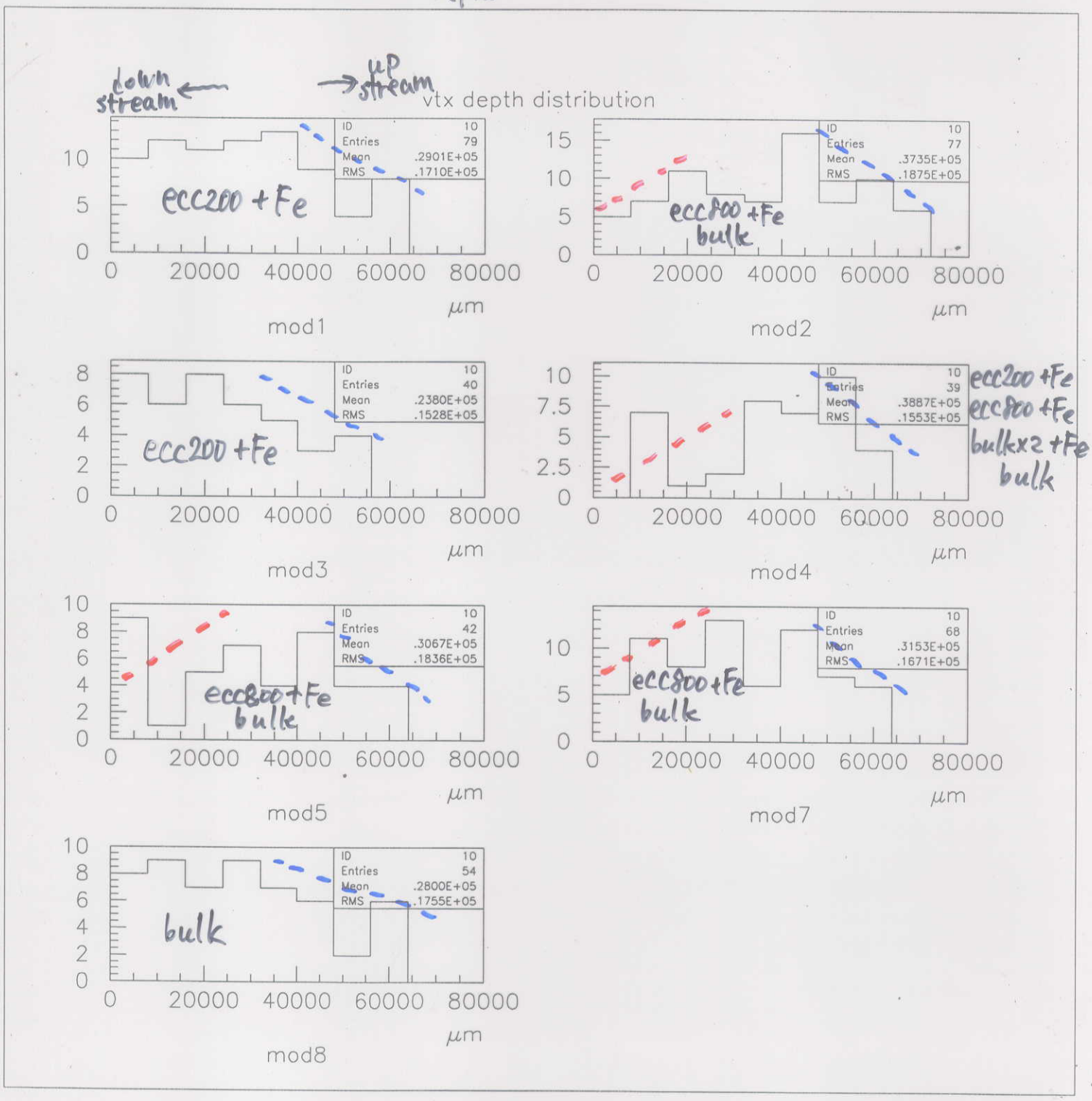
Then large angle kink was checked

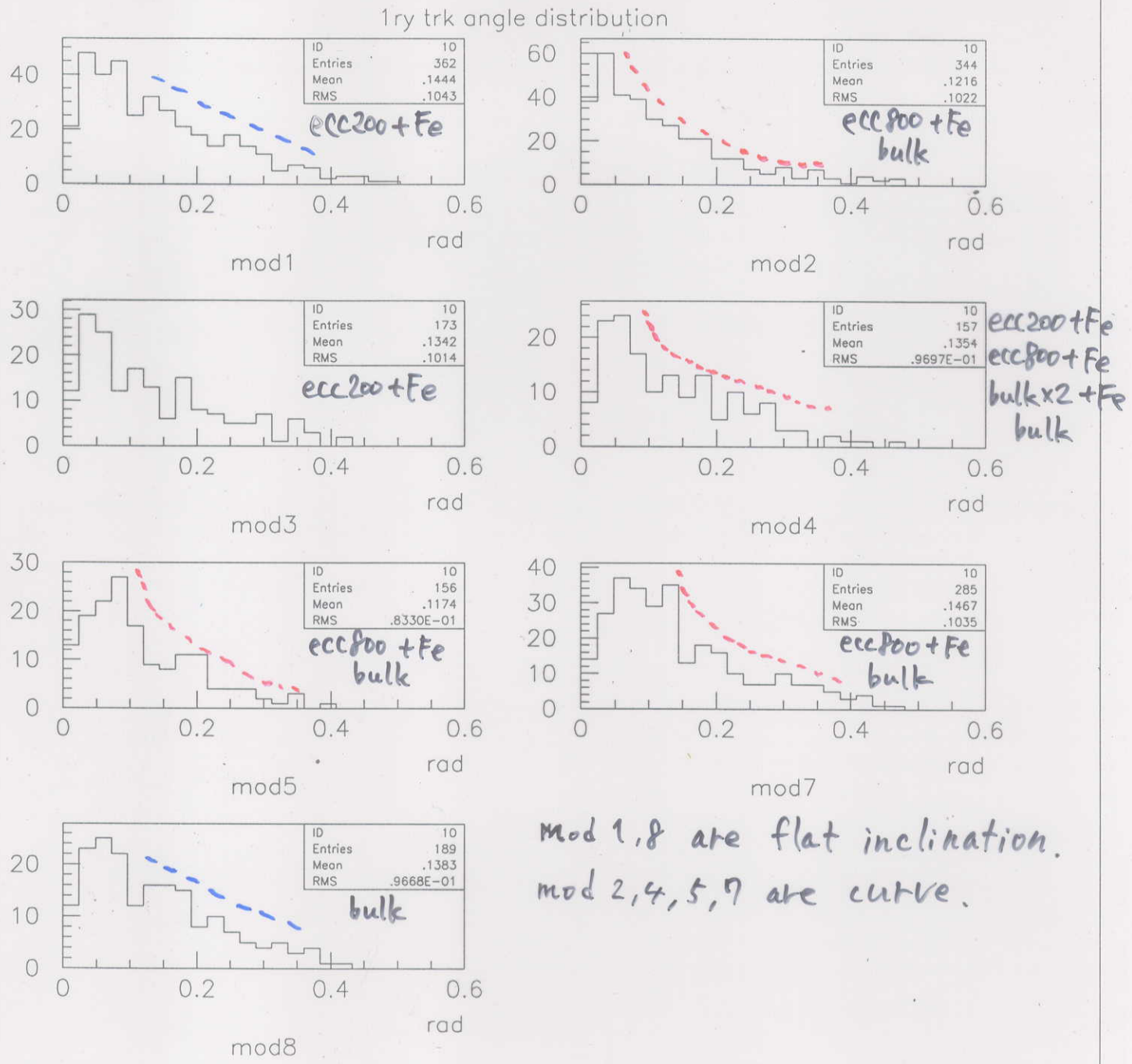
Followed down data have been made

Nonaka spent 6 months making followed down data.
(Nov/2002 ~ May/2003)

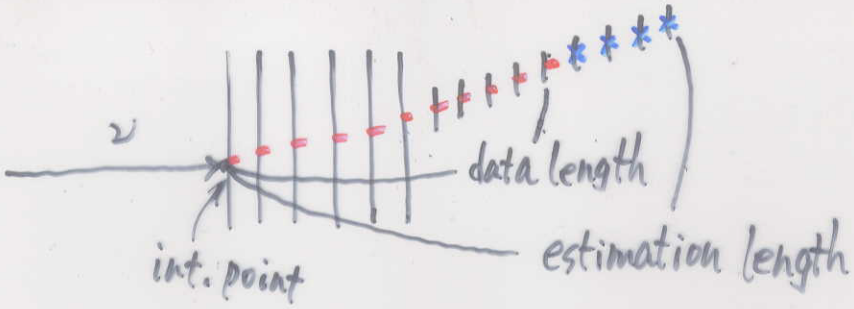
Using 3D Viewer, I checked to search for small angle kink.
189 trks in mod 8 have already been finished.
In 189 trks, only 4 trks were bad connection trk.

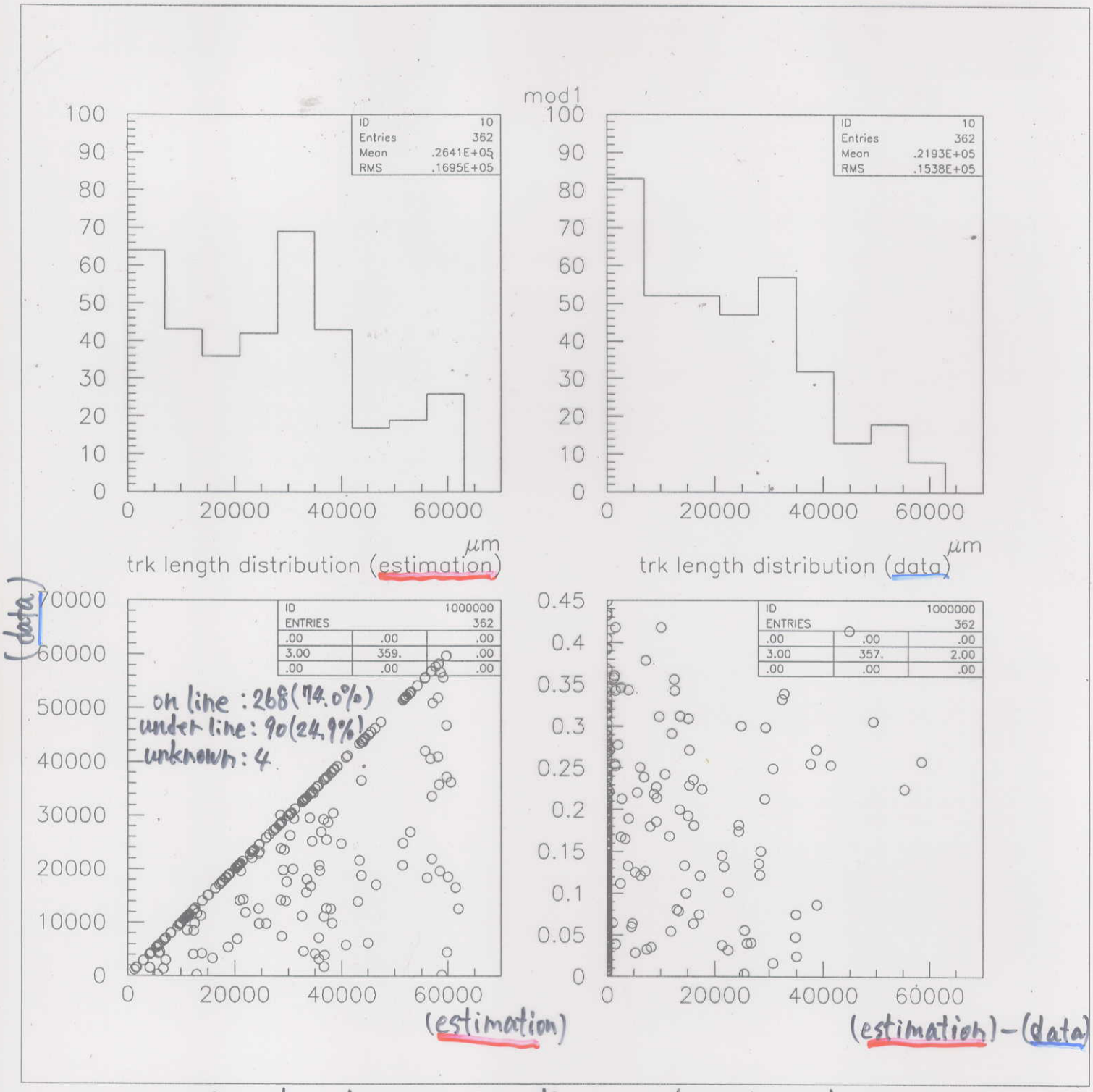

module
ν
0
depth


down stream
up stream
vtx depth distribution
ecc200 +Fe
ID 10
Entries 79
Mean .2901E+05
RMS .1710E+05
mod1
ecc800 +Fe bulk
ID 10
Entries 77
Mean .3735E+05
RMS .1875E+05
mod2
ecc200 +Fe
ID 10
Entries 40
Mean .2380E+05
RMS .1528E+05
mod3
ecc200 +Fe
ecc800 +Fe
bulkx2 +Fe
bulk
ID 10
Entries 39
Mean .3887E+05
RMS .1553E+05
mod4
ecc800+Fe bulk
ID 10
Entries 42
Mean .3067E+05
RMS .1836E+05
mod5
ecc800+Fe bulk
ID 10
Entries 68
Mean .3153E+05
RMS .1671E+05
mod7
bulk
ID 10
Entries 54
Mean .2800E+05
RMS .1755E+05
mod8
μm



mod 1,8 are flat inclination.
mod 2,4,5,7 are curve.

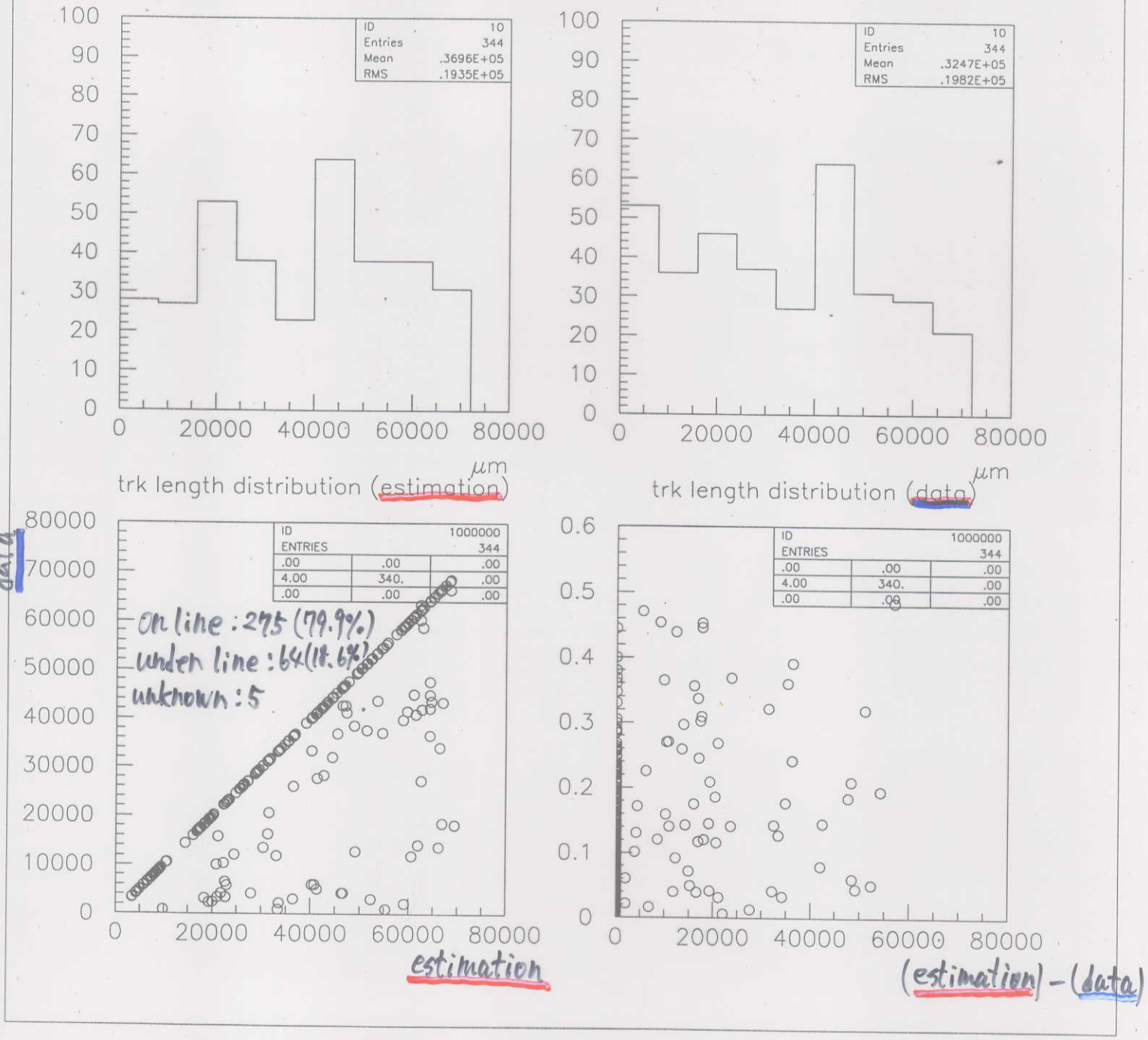


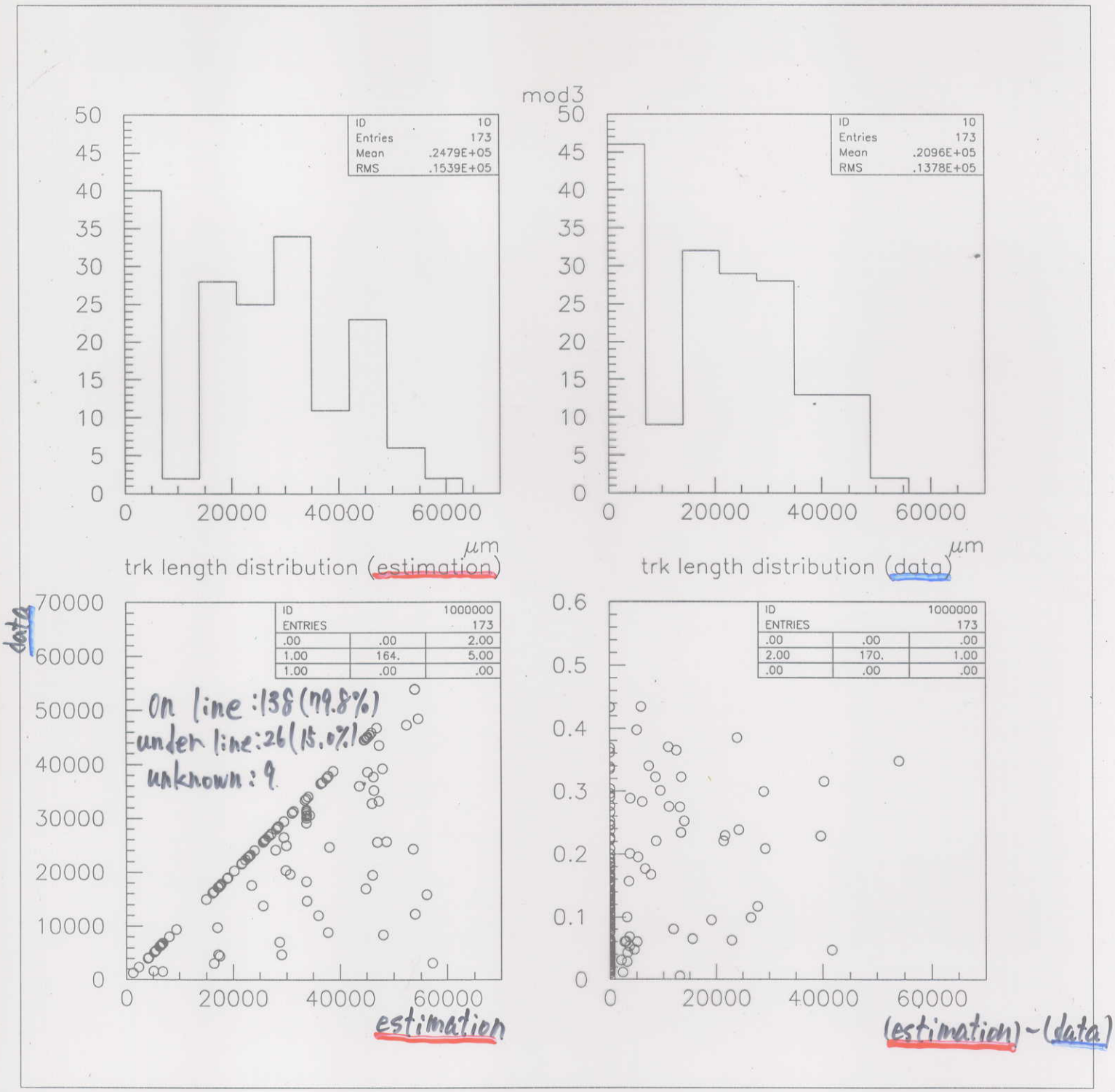


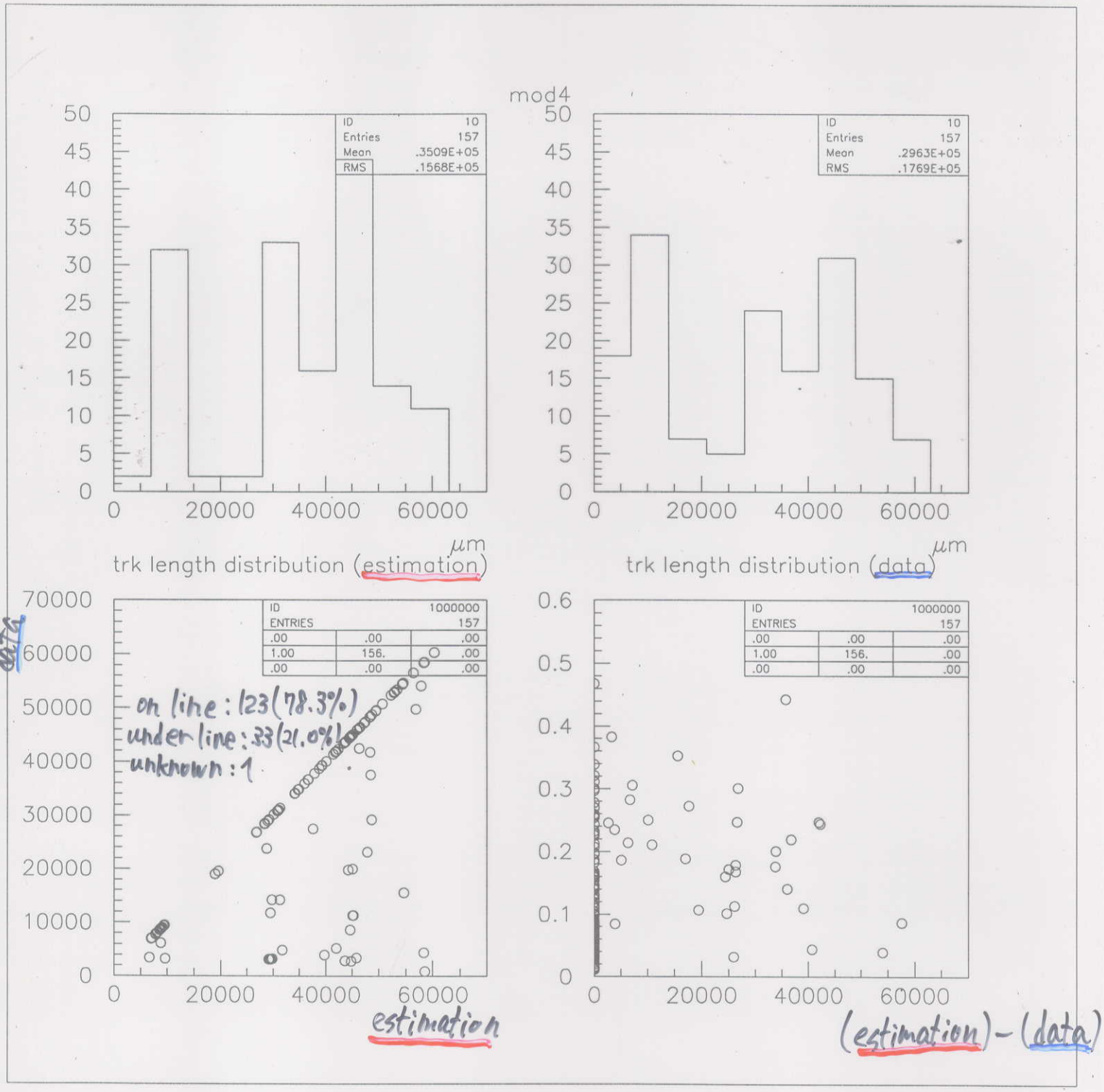
estimation length = data length ··· on line → ~~do nothing trk~~ contain small angle kink trk

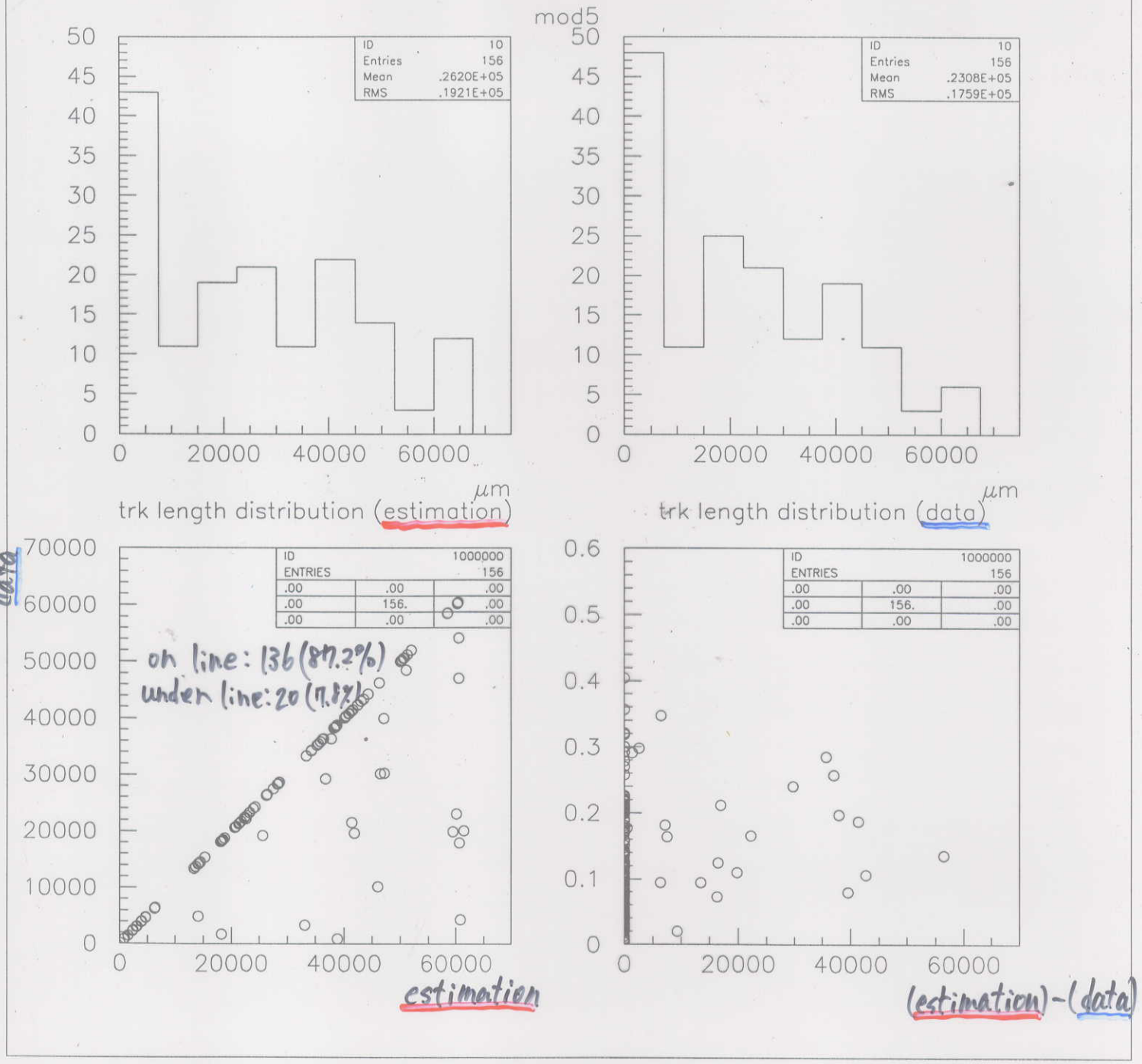
except them ··· ··· under line → contain large angle kink trk (If exist)

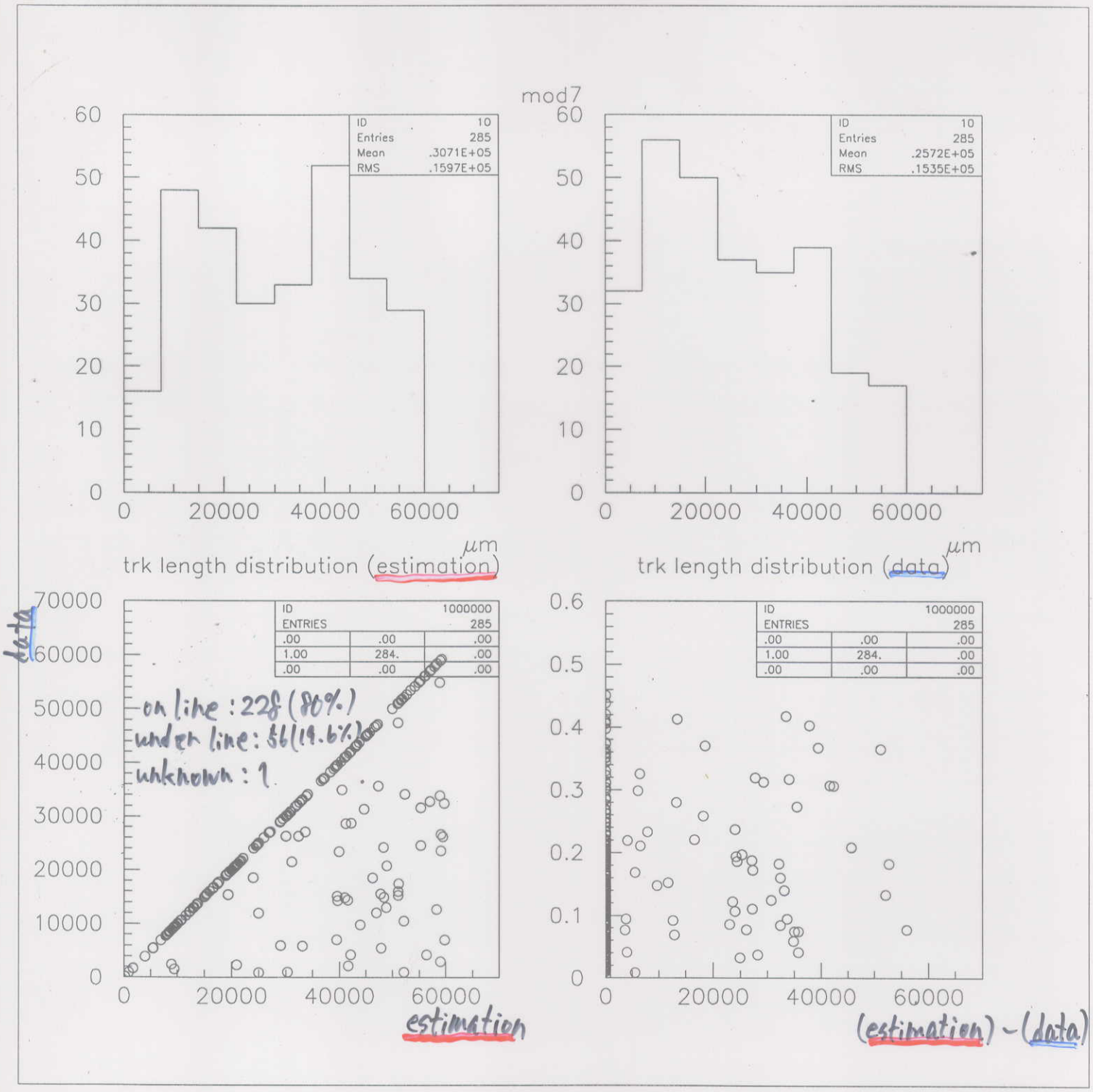
mod 2

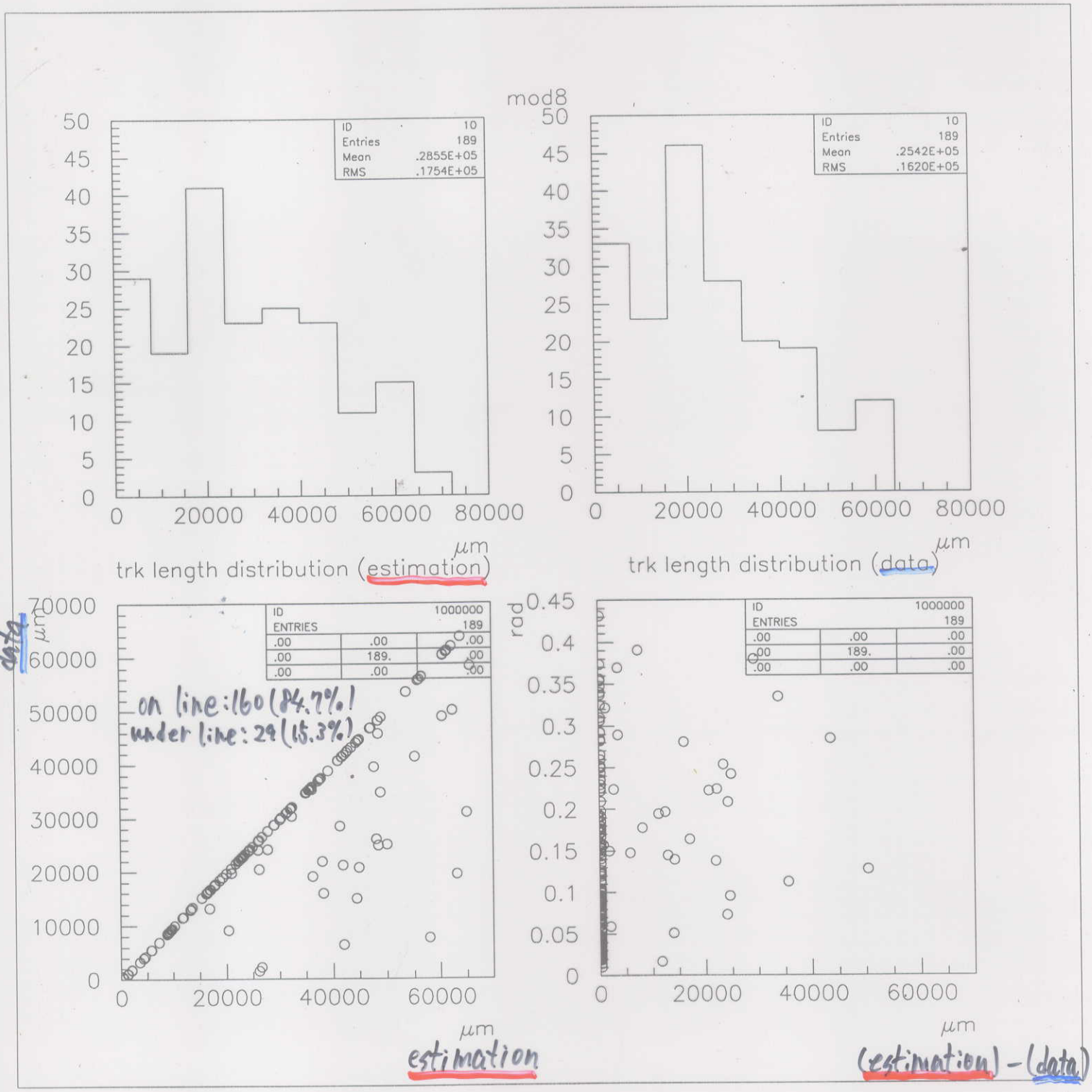

ID 10
Entries 344
Mean .3696E+05
RMS .1935E+05
trk length distribution (estimation) μm
ID 10
Entries 344
Mean .3247E+05
RMS .1982E+05
trk length distribution (data) μm
data
ID 1000000
ENTRIES 344
On line : 275 (79.9%)
under line : 64 (18.6%)
unknown : 5
estimation
ID 1000000
ENTRIES 344
(estimation) - (data)


mod3
ID 10
Entries 173
Mean .2479E+05
RMS .1539E+05
trk length distribution (estimation)
μm
ID 10
Entries 173
Mean .2096E+05
RMS .1378E+05
trk length distribution (data)
μm
data
ID 1000000
ENTRIES 173
.00 .00 2.00
1.00 164. 5.00
1.00 .00 .00
On line : 138 (79.8%)
under line : 26 (15.0%)
unknown : 9
estimation
ID 1000000
ENTRIES 173
.00 .00 .00
2.00 170. 1.00
.00 .00 .00
(estimation) - (data)


mod4
ID 10
Entries 157
Mean .3509E+05
RMS .1568E+05
trk length distribution (estimation)
μm
ID 10
Entries 157
Mean .2963E+05
RMS .1769E+05
trk length distribution (data)
μm
ID 1000000
ENTRIES 157
on line : 123 (78.3%)
under line : 33 (21.0%)
unknown : 1
data
estimation
ID 1000000
ENTRIES 157
(estimation) - (data)


mod5
ID 10
Entries 156
Mean .2620E+05
RMS .1921E+05
trk length distribution (estimation)
μm
ID 10
Entries 156
Mean .2308E+05
RMS .1759E+05
trk length distribution (data)
μm
data
ID 1000000
ENTRIES 156
on line: 136 (87.2%)
under line: 20 (7.8%)
estimation
ID 1000000
ENTRIES 156
(estimation)-(data)


mod7
ID 10
Entries 285
Mean .3071E+05
RMS .1597E+05
trk length distribution (estimation) μm
ID 10
Entries 285
Mean .2572E+05
RMS .1535E+05
trk length distribution (data) μm
data
ID 1000000
ENTRIES 285
.00 .00 .00
1.00 284. .00
.00 .00 .00
on line : 228 (80%)
under line : 56 (19.6%)
unknown : 1
estimation
ID 1000000
ENTRIES 285
.00 .00 .00
1.00 284. .00
.00 .00 .00
(estimation) - (data)


mod8
ID 10
Entries 189
Mean .2855E+05
RMS .1754E+05
trk length distribution (estimation)
μm
ID 10
Entries 189
Mean .2542E+05
RMS .1620E+05
trk length distribution (data)
μm
data
μm
ID 1000000
ENTRIES 189
on line: 160 (84.7%)
under line: 29 (15.3%)
estimation
μm
rad
ID 1000000
ENTRIES 189
(estimation) - (data)
μm

followed down data condition

module	construction	try event	try trk	on line	under line	unknown
1	ecc200 + Fe	79	362	268 (74.0%)	90 (24.9%)	4
2	ecc150 + Fe bulk	77	344	275 (79.9%)	64 (18.6%)	5
3	ecc200 + Fe	40	173	138 (79.8%)	26 (15.0%)	9
4	ecc200 + Fe ecc150 + Fe bulk x2 + Fe bulk	39	157	123 (78.3%)	33 (21.0%)	1
5	ecc200 + Fe bulk	42	156	136 (87.2%)	20 (12.8%)	0
7	ecc200 + Fe bulk	68	285	228 (80%)	56 (19.6%)	1
8	bulk	54	189	160 (84.7%)	29 (15.3%)	0
total		399	1666	1328 (79.7%)	318 (19.1%)	20

Using 3D Viewer,

I checked 189 try trks in mod8

mod8 kink selection

try event : 54

try trk : 189 → do nothing & penetorate → no → 52 → do nothing & side edge → no → 25

do nothing & penetorate → yes → 137

do nothing & side edge → yes → 27

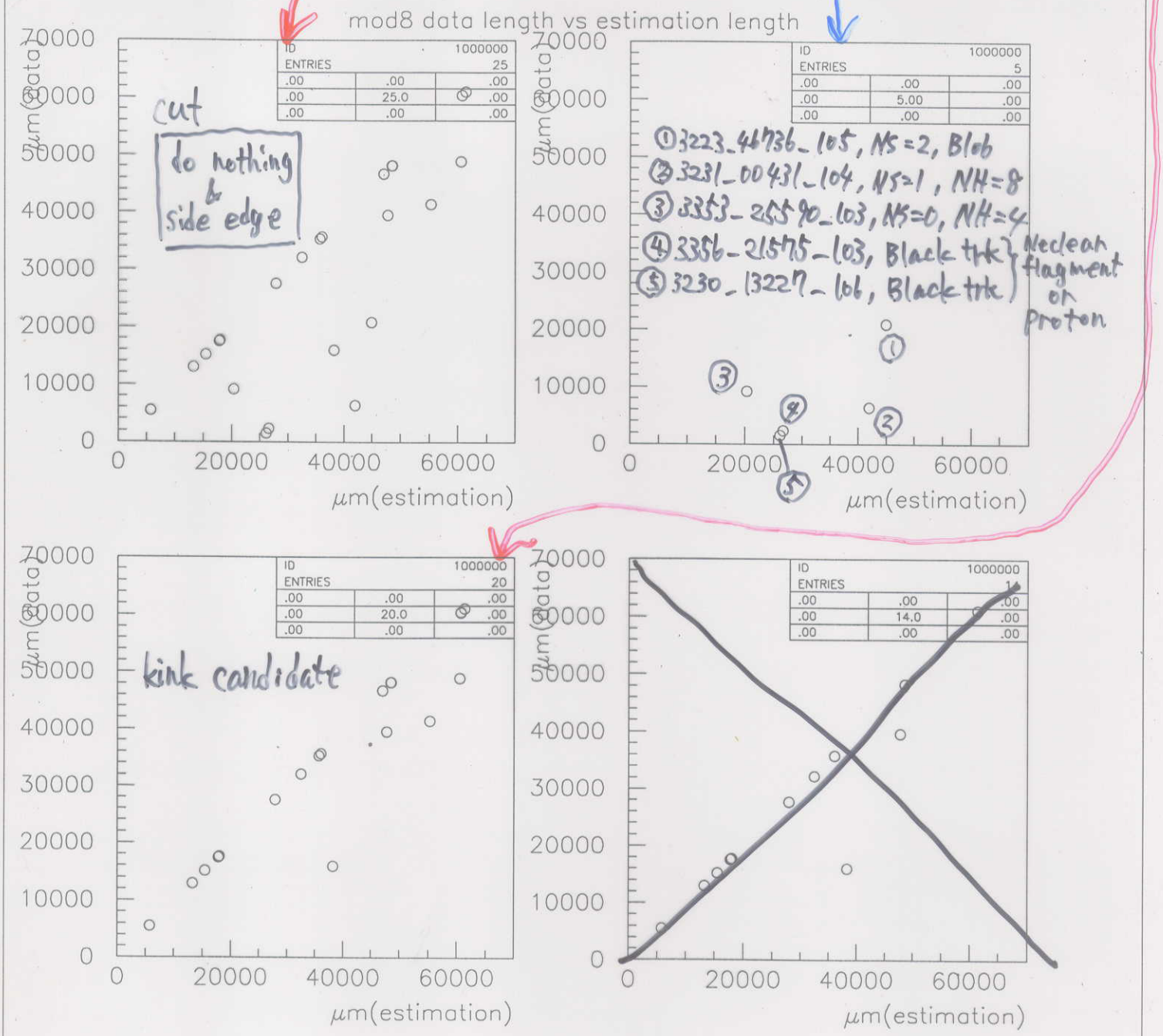
mod 8 kink selection

189 → [do nothing & penetorate] —no→ 52 → [do nothing & side edge] —no→ 25 → [kink or stop] —kink→ 20

[do nothing & penetorate] —yes→ 137

[do nothing & side edge] —yes→ 27

[kink or stop] —stop→ 5 → [eye check] (manual check)



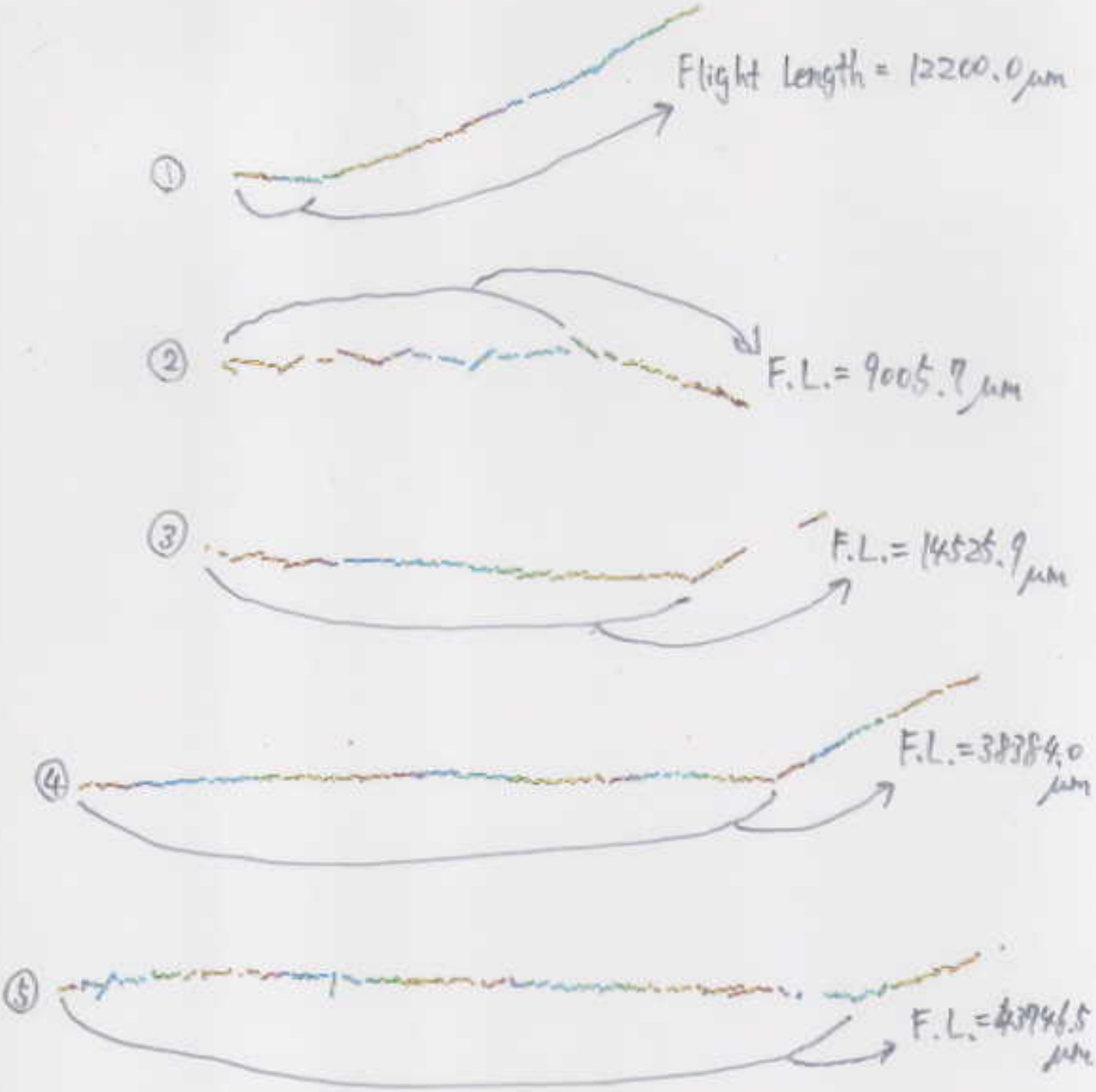
kink candidate: 20 → [check detail 3D Viewer] —kink→ 14

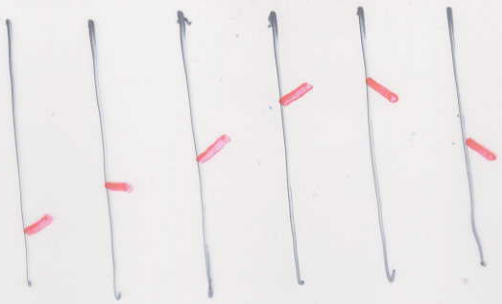
→ 2 → [eye check] → e-pair

→ 4 (Miss Connection)

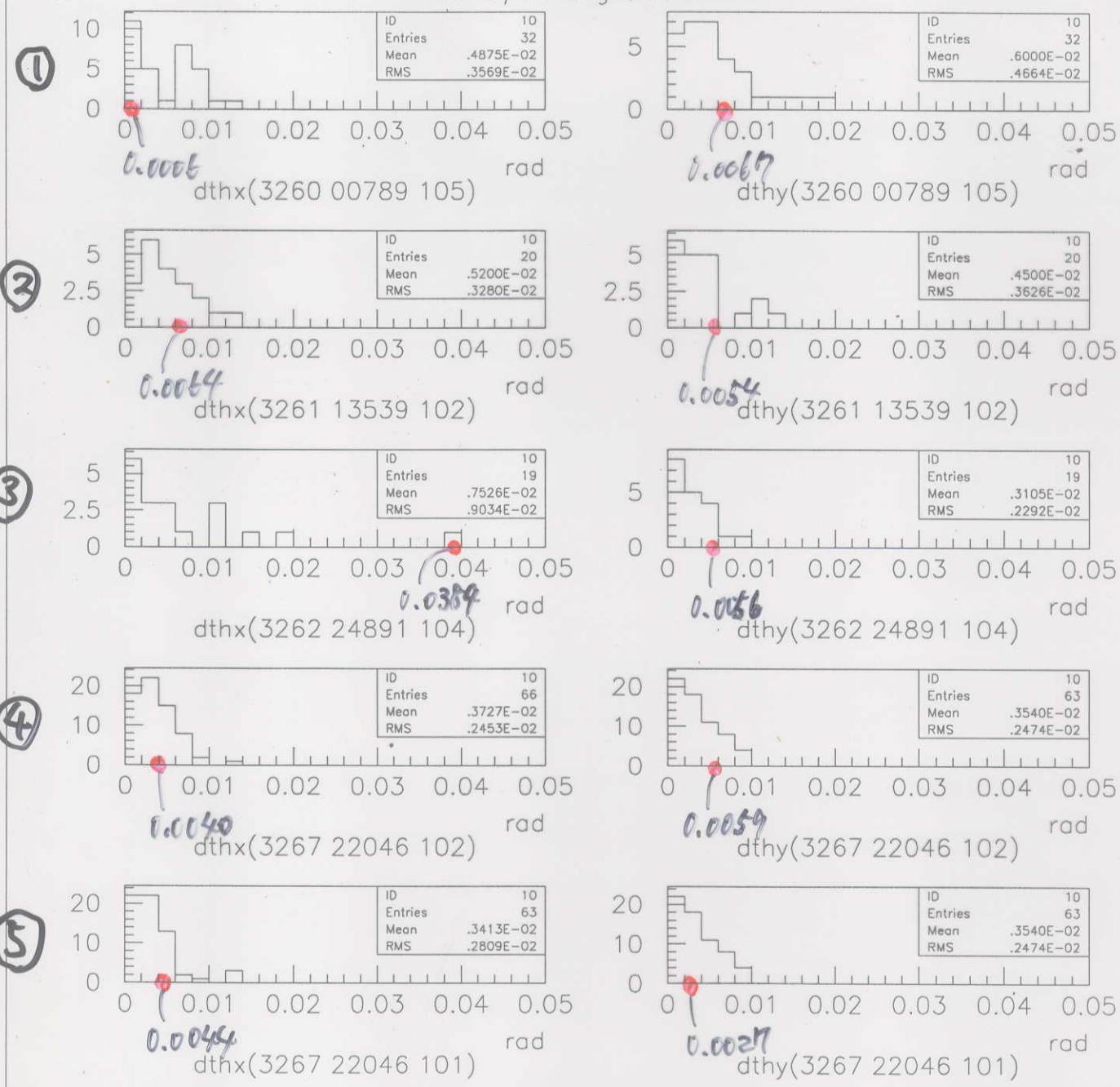
3D Viewer Image

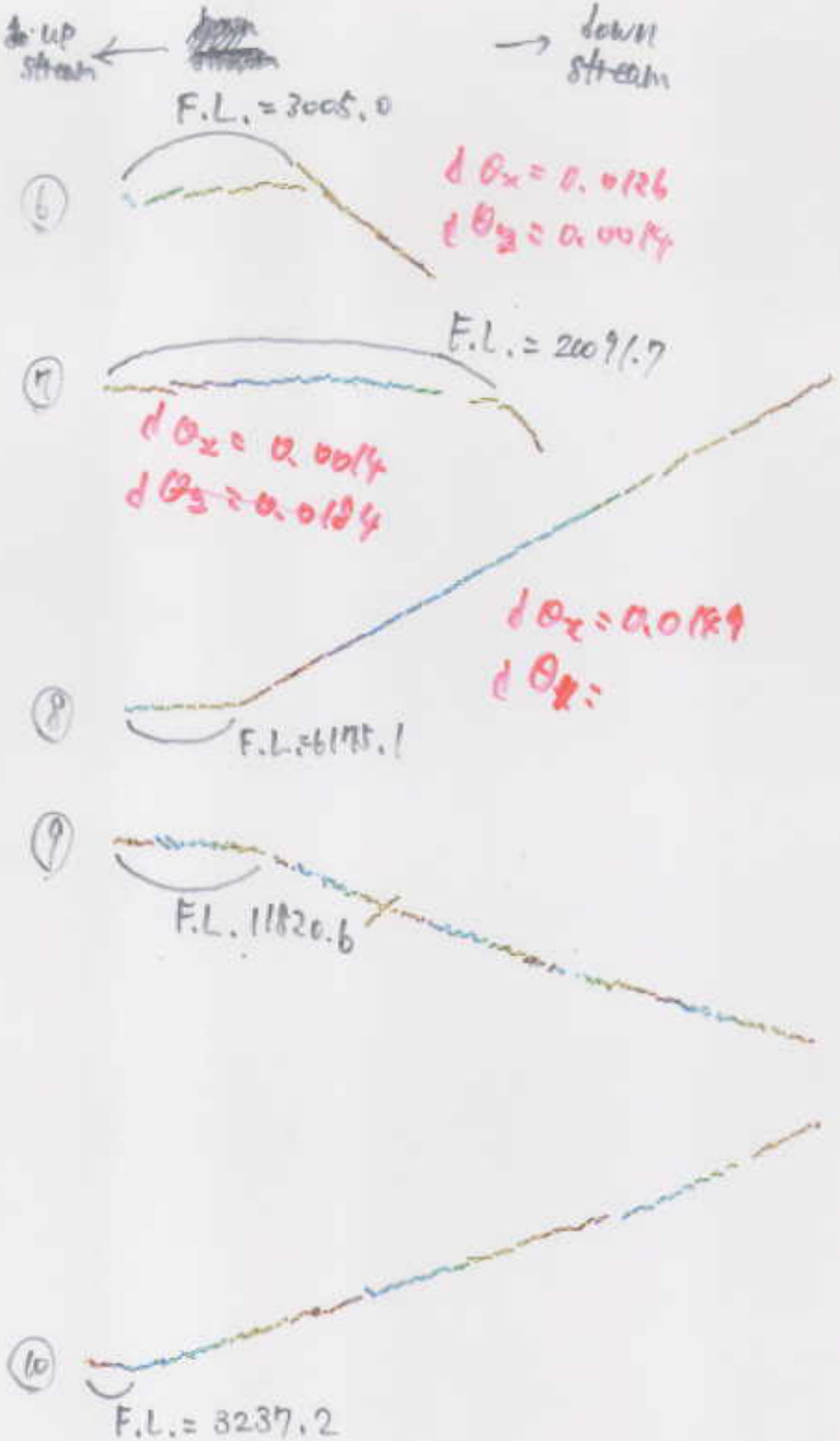
up stream ← → down stream

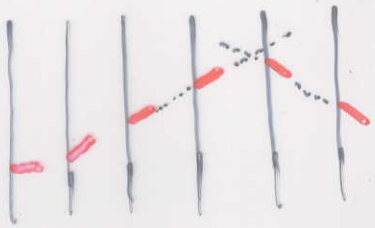




Delta μtrk angle distribution

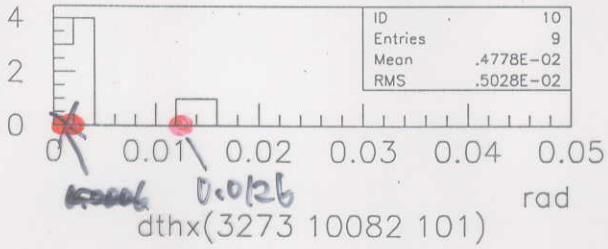


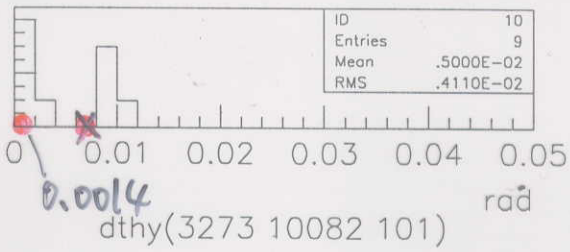

up stream
down stream
F.L. = 3005.0
⑥
dθx = 0.0126
dθz = 0.0014
F.L. = 2091.7
⑦
dθx = 0.0014
dθz = 0.0124
dθx = 0.0149
dθz =
⑧
F.L. = 6175.1
⑨
F.L. 11820.6
⑩
F.L. = 3237.2



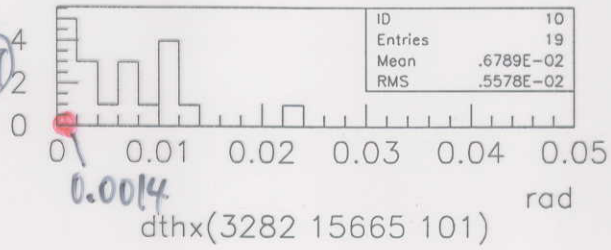
Delta μtrk angle distribution

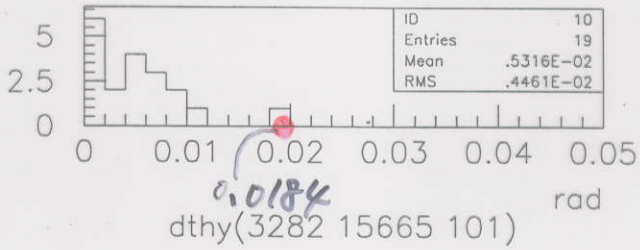
6



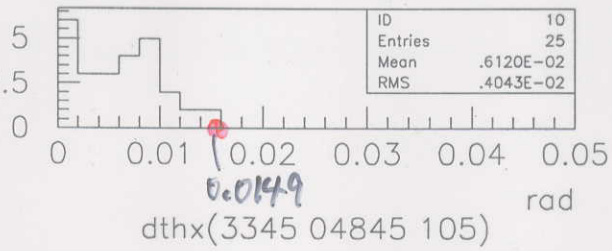


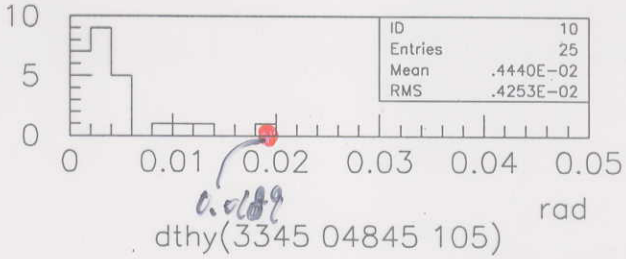
7



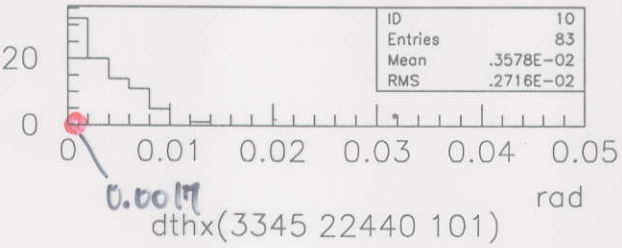


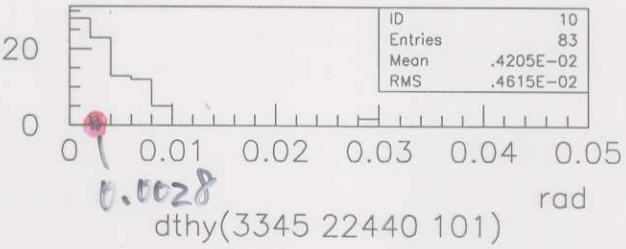
8



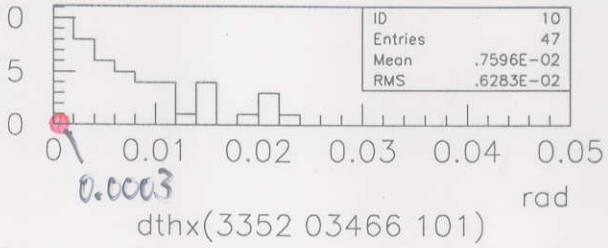


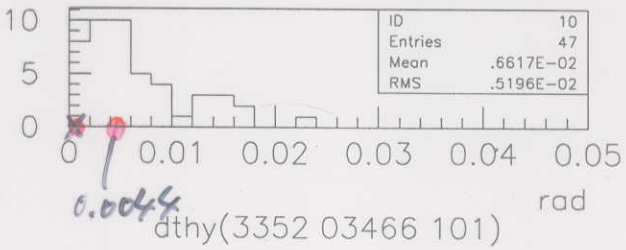
9





10





F.L. = 16890,4 µm

(11)

F.L. = 9559.7 µm

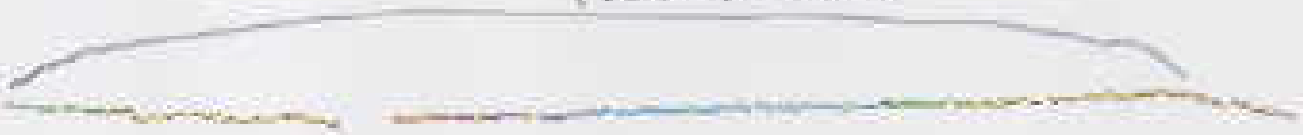
(12)

F.L. = 3045.7 µm

(13)

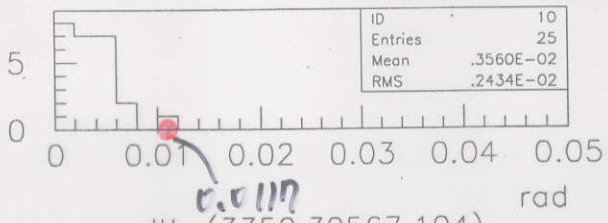
F.L. = 11783,0

(14)

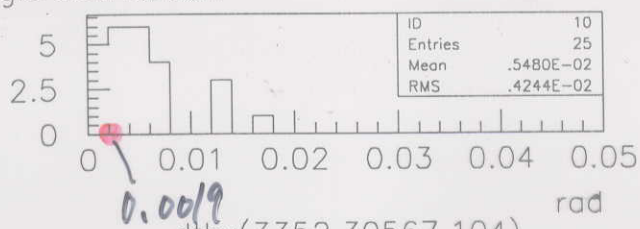


Delta μtrk angle distribution

(11)



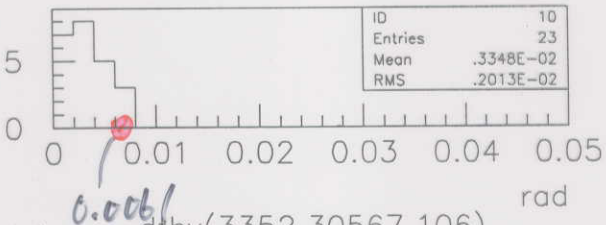
dthx(3352 30567 104)



dthy(3352 30567 104)

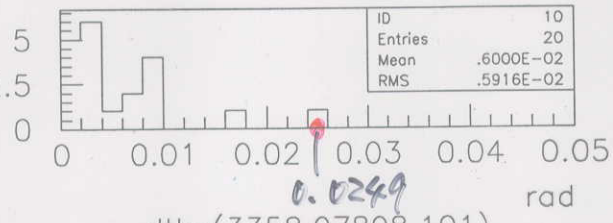
(12)

dthx(3352 30567 106)

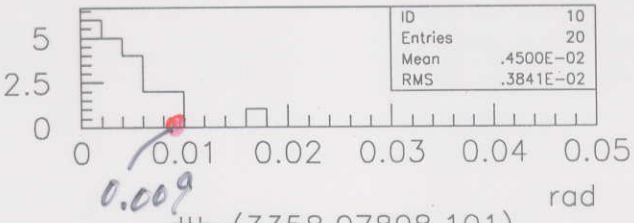


dthy(3352 30567 106)

(13)

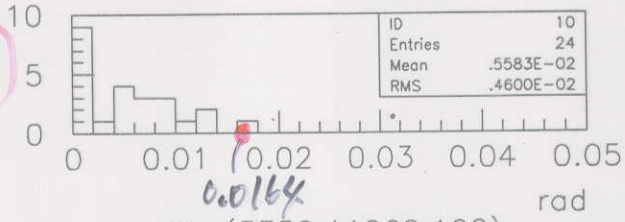


dthx(3358 07808 101)

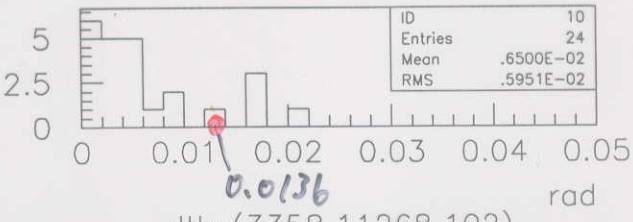


dthy(3358 07808 101)

(14)



dthx(3358 11268 102)



dthy(3358 11268 102)

Conclusion

Kink angle is small.

But μ-trk angle error is large.

after this

Kink angle should be measured detail

And systematic.