TEST BEAM
A SUMMARY

LI Jiacai 2003

- GENERAL
- SINGLE PARTICLE SPECTROMETER
- ČERENKOV
- TOF
- WMPC
- ELECTRONICS

GENERAL

THE BEAM EXPERIMENT FROM LINAC IN 10* BUILDING

- THIS BEAM TRANSPORT LINE IS 34 METERS LONG;
- THREE EXPERIMENTS EREA;
- THE EREA OF SHIELDING IS ABOUT 360 M*M;
- THE TOTAL POWER IS 340KW;
- NOW, THE STAFF IS 6 PEOPLE AND 3 STUDENTS.

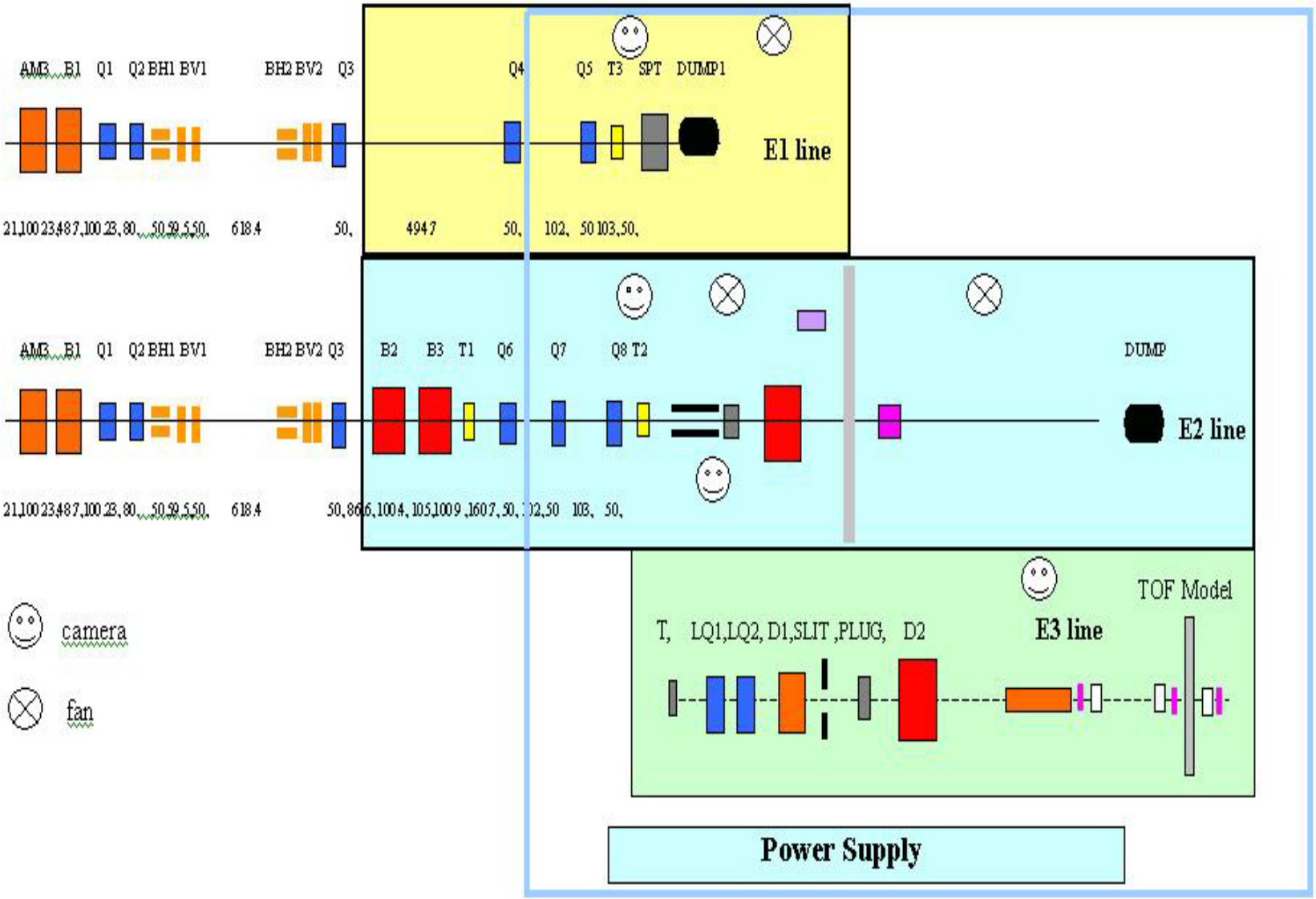
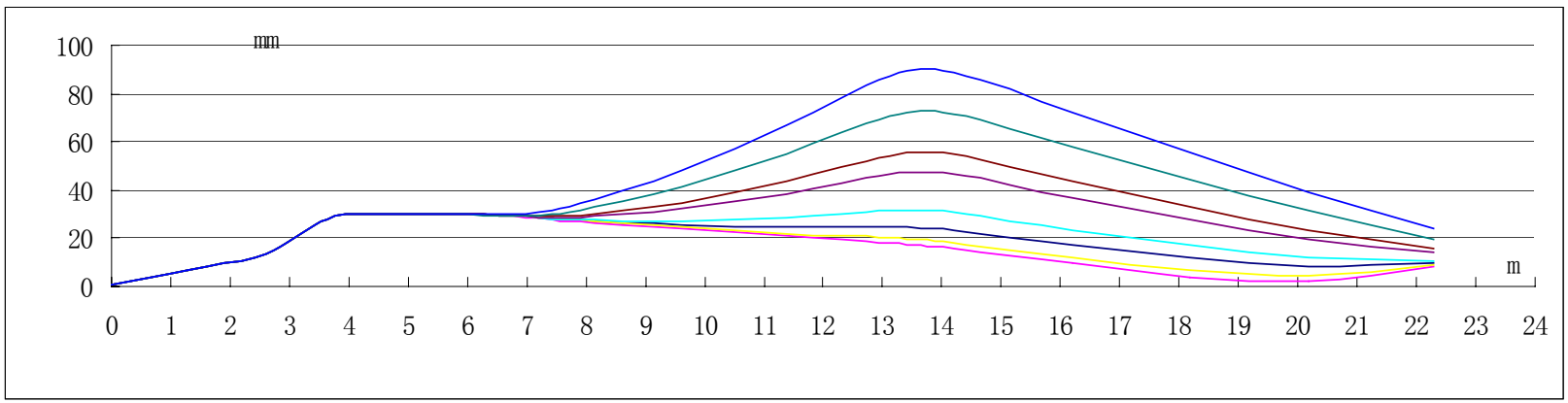
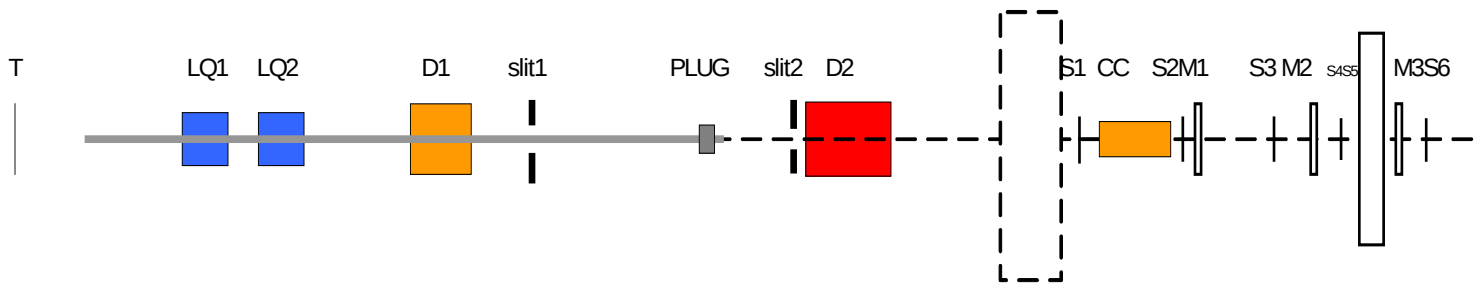


Fig. 0. The composition of TEST BEAM

Single Particle Spectrometer

THE CONFIGURATION OF SPECTROMETER SYSTEM





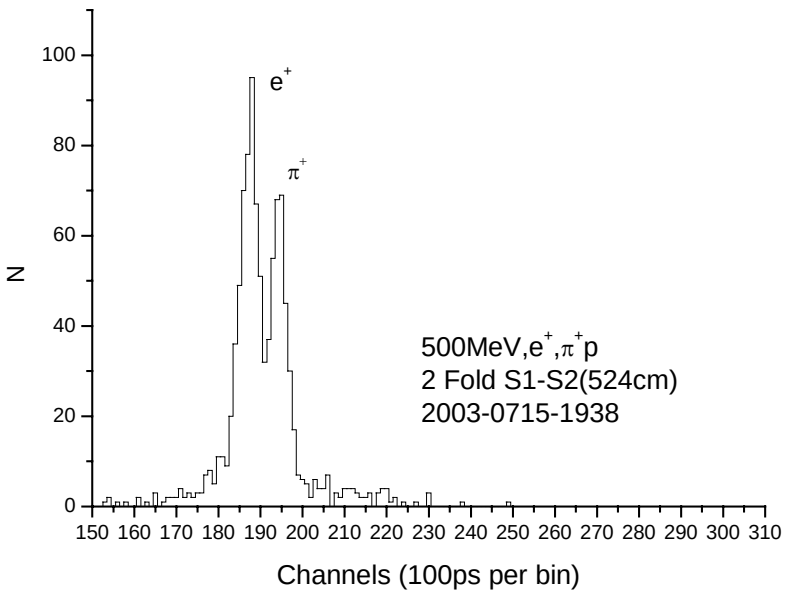
MAGNET PARAMETERS

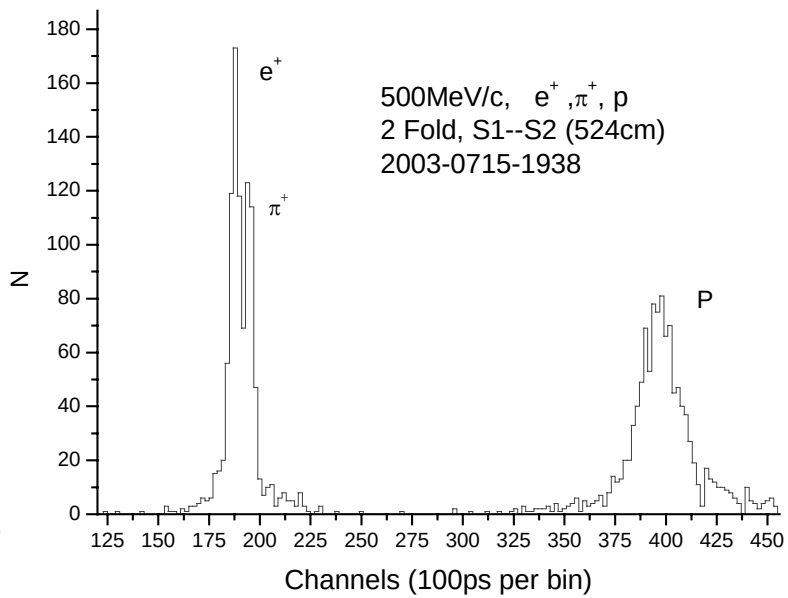
ON THE SPECTROMETER

MAGNET		LQ1	LQ2	D1(A)	D2 (Gs)
LQ1/LQ2=1.318		INTENSITY (Gs/cm)			
MOMENTUM	200	100.3	76.12	58.02	1880.2
(MeV/C)	400	200.6	152.2	116.4	3759.9
	800	401.3	304.5	233.1	7519.2
	1000	501.6	380.6	291.4	9398.8

DETECTORS:

@ SICNTILLATORS (S1,S2,S3…….) 3×3×0.3; 5×6×0.3; 5×5×0.5





ČERENKOV COUNTER

@ WITH 1.29 METERS LONG

THE WORKING GAS IS CO2 (0.02MPa) .

The efficiencies measurements:

Electron	(S1.S2.S3.Č)/(S1.S2.S3)	3fold+VETO
P=200MeV/c	2166/2199	3/2339
1GeV/c	478/500	25/500
	95-98%	

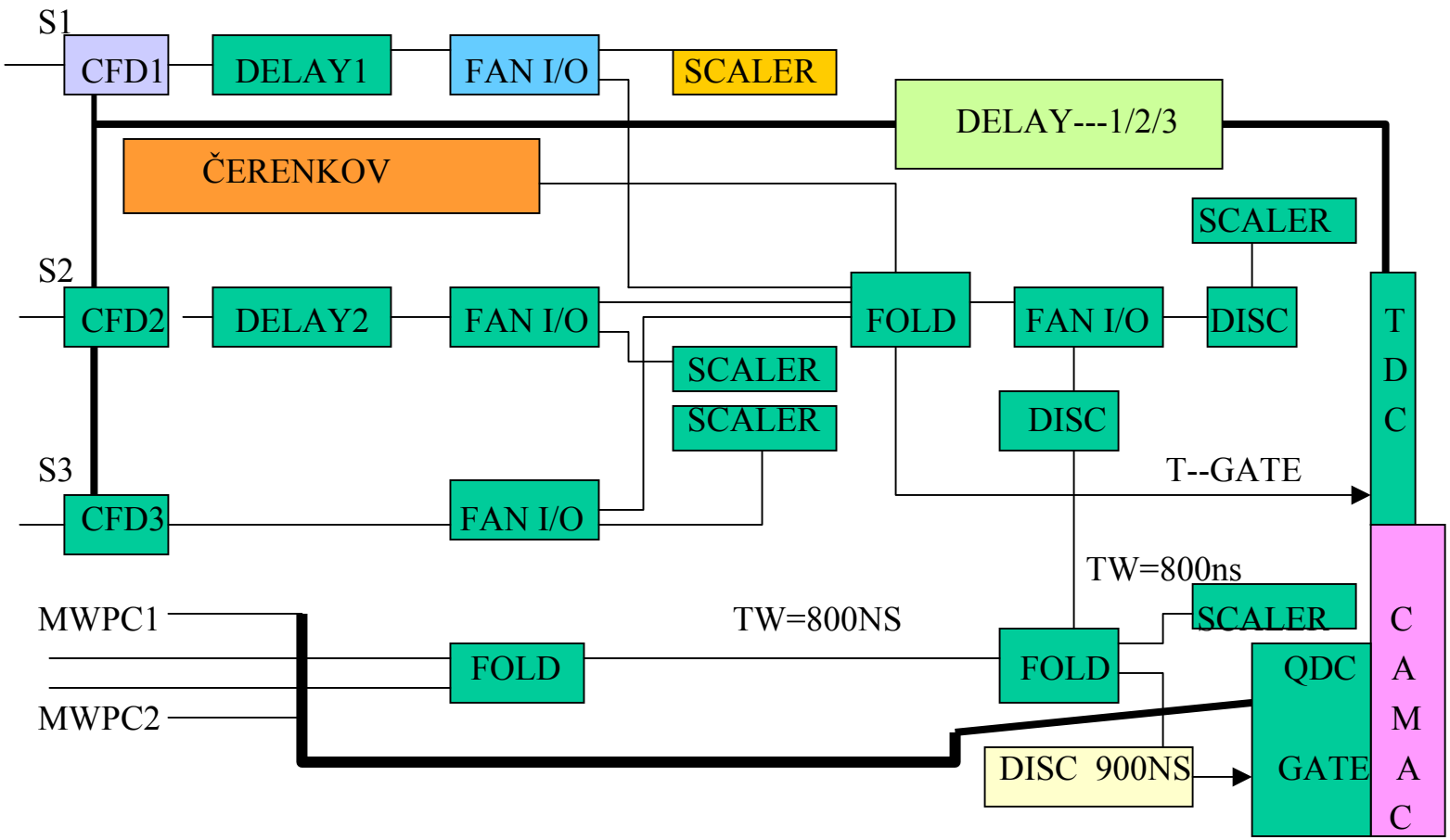
MWPC (×4)

- Table 1

Parameters of the multiwire proportional chamber.

Area of the window	80mm × 80mm
Sensitive area	50.4mm × 50.4mm
Anode wire spacing	2mm
Sense strip width	4.2mm(with 6 wires)
Sense wire diameter	50 μm
Anode wire diameter	20 μm
Gap	6mm × 2

ELECTRONICS(NOW)

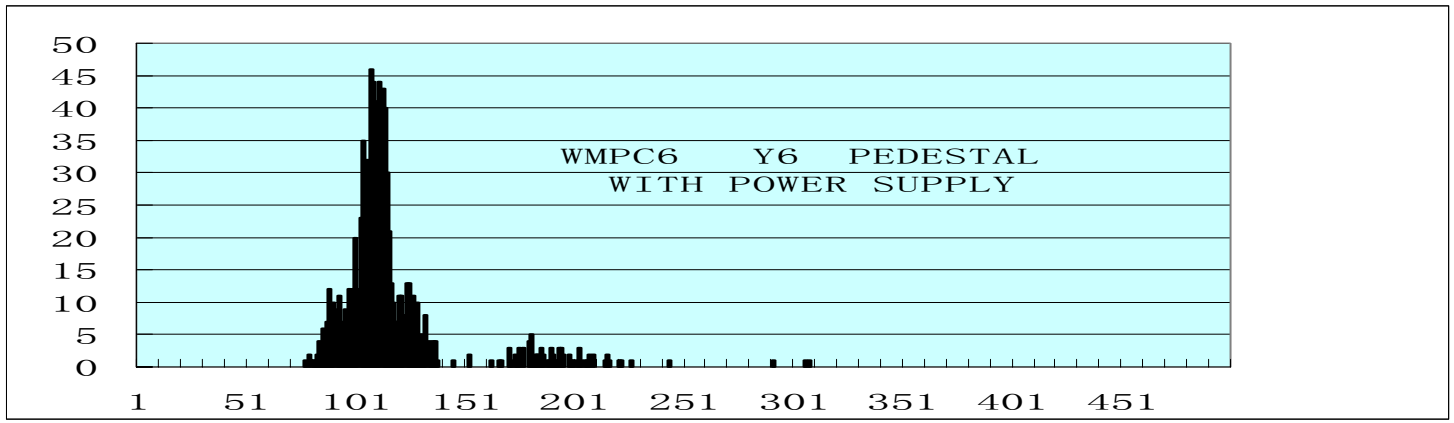


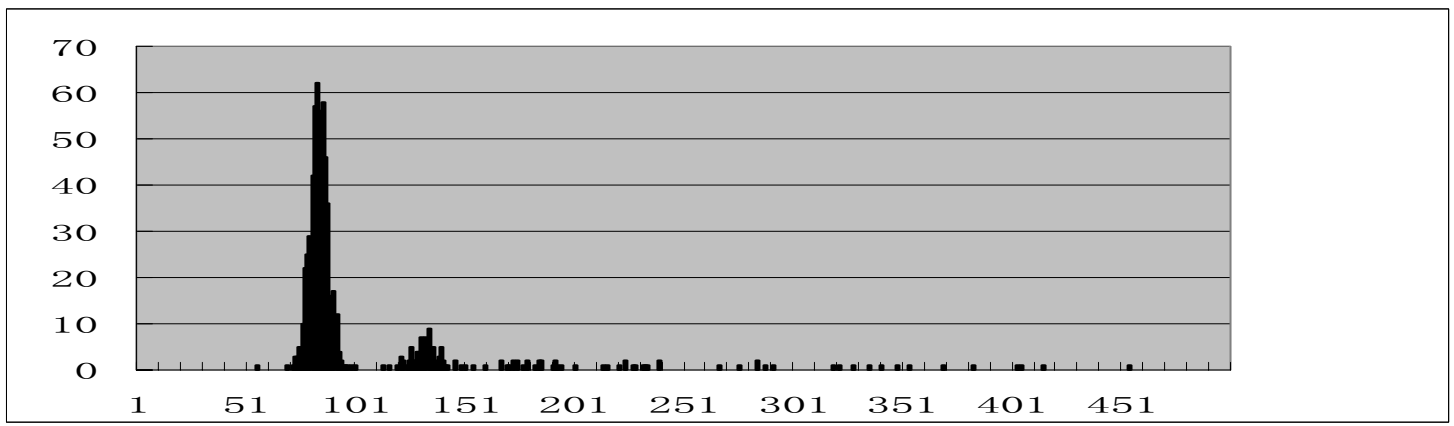
The experiments of MWPC

& EFFICIONCIES: 5Fold/3Fold

800MeV/c (e+/p)	2373/2870=83.4%
	2310/2751=84%
	3158/3737=84.5%
800MeV/c (e-)	3287/4300=76.4%
400MeV/c (e-)	3406/4302=79.2%

& PEDESTAL


WMPC6 Y6 PEDESTAL
WITH POWER SUPPLY
50
45
40
35
30
25
20
15
10
5
0
1
51
101
151
201
251
301
351
401
451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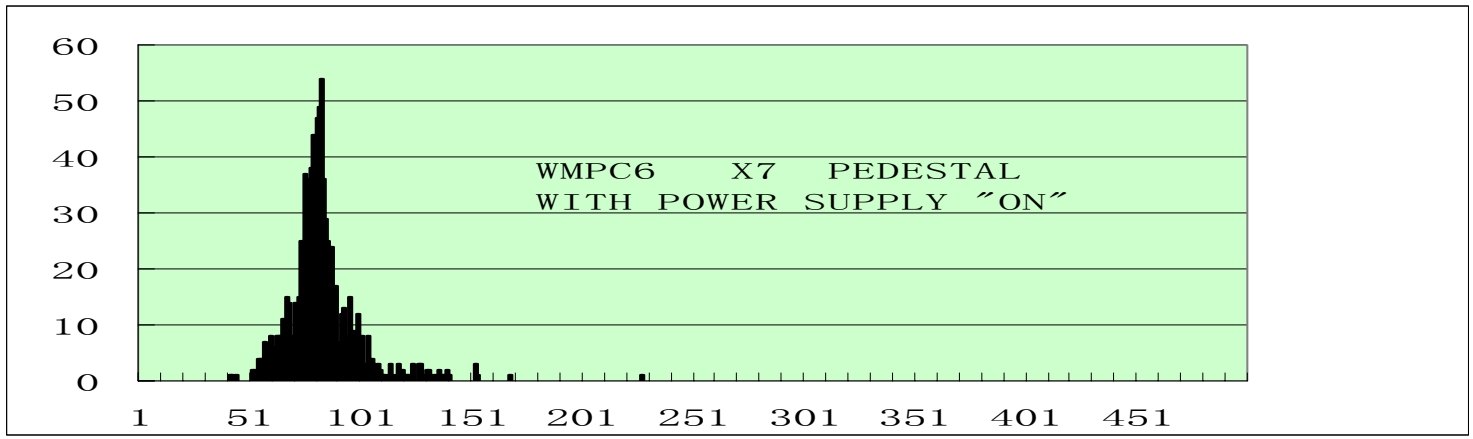
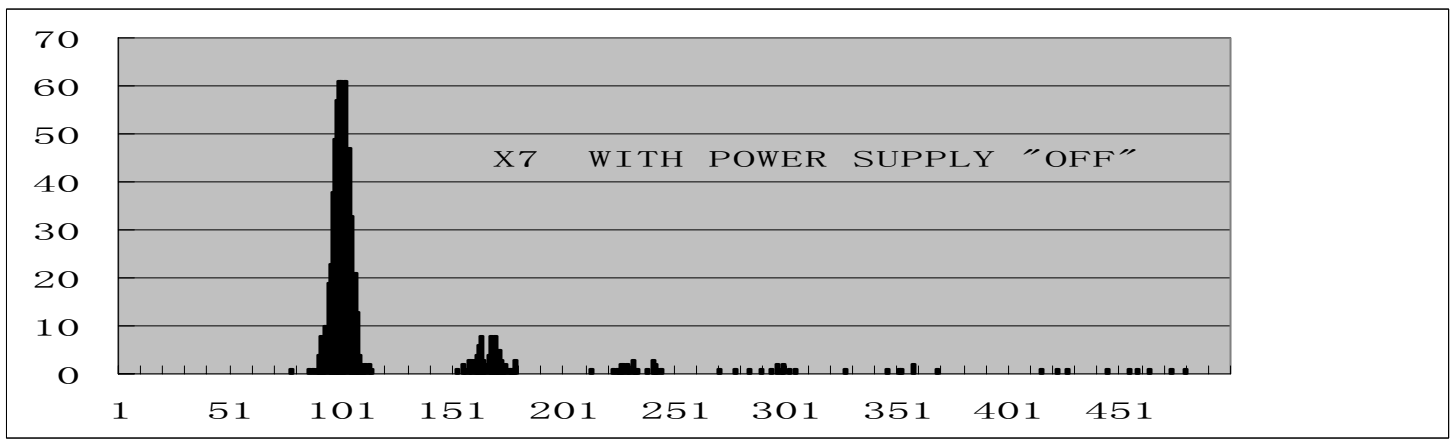
151
201
251
301
351
401
451


60
50
40
30
20
10
0
WMPC6 X7 PEDESTAL
WITH POWER SUPPLY "ON"
1 51 101 151 201 251 301 351 401 451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60
50
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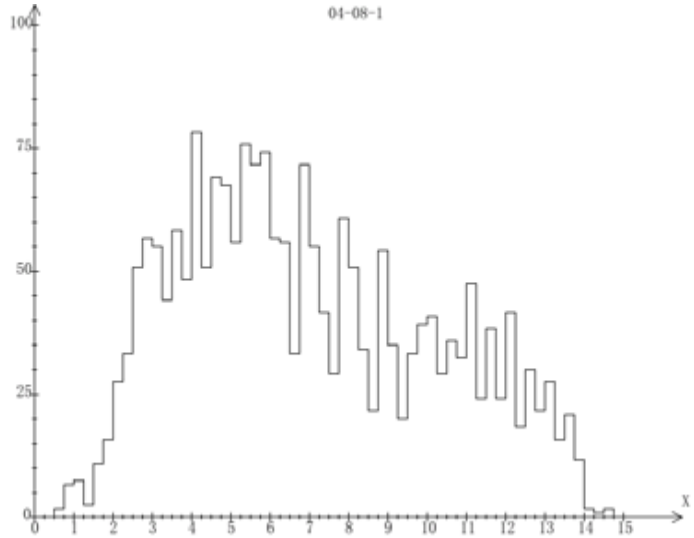
30
20
10
0
X7 WITH POWER SUPPLY "OFF"
1 51 101 151 201 251 301 351 401 451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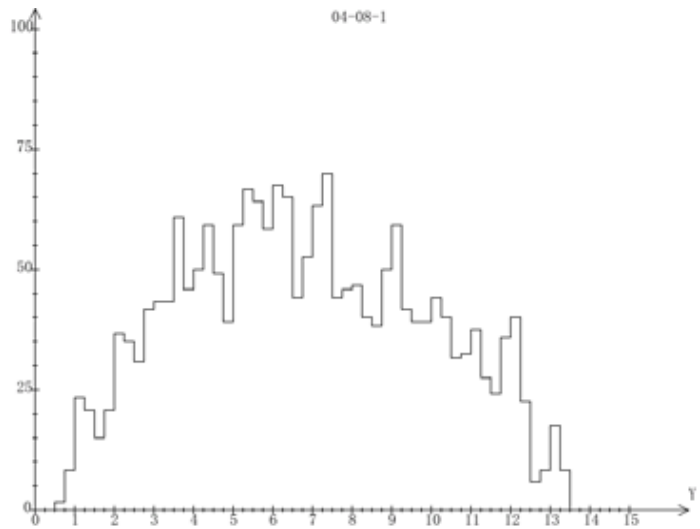
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
X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75
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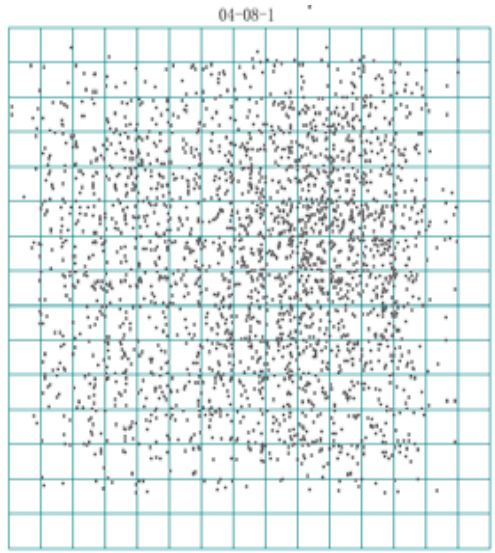
0
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
Y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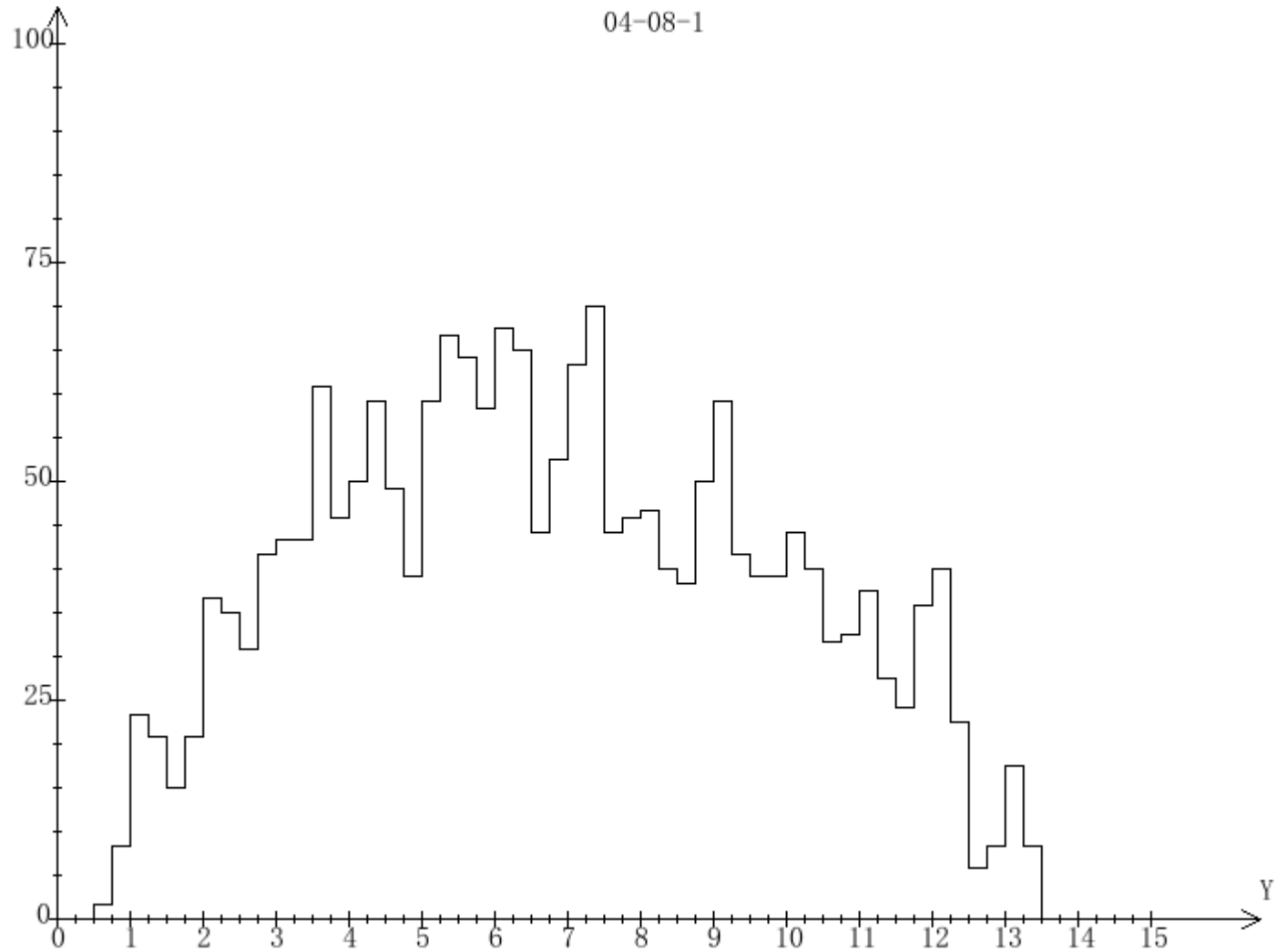
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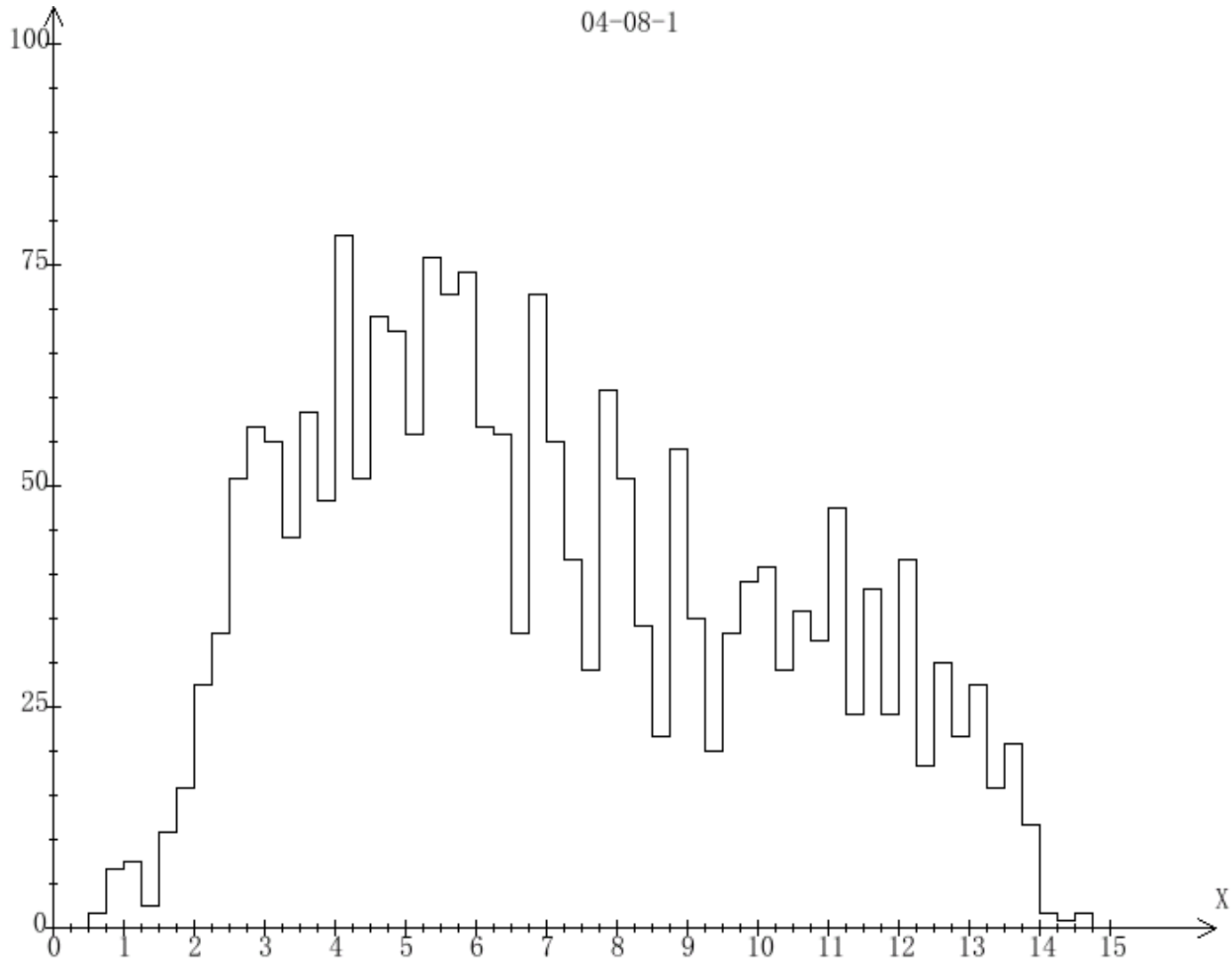
15
Y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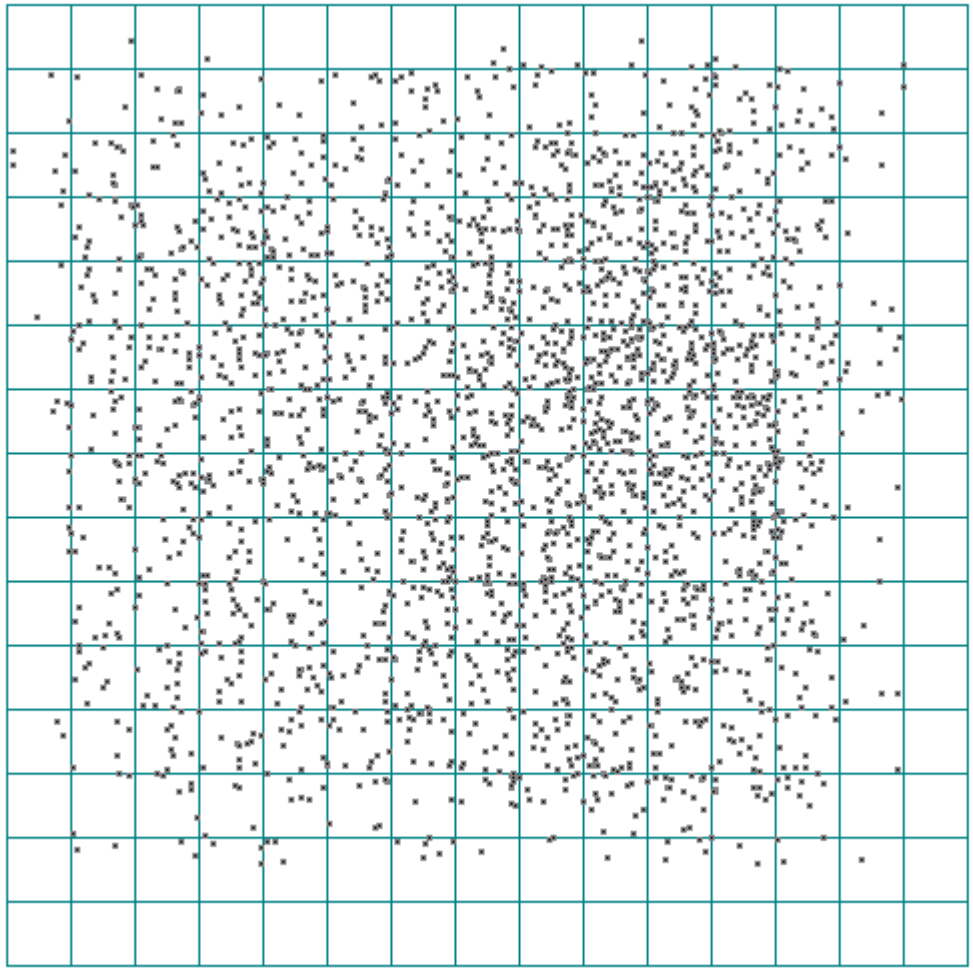

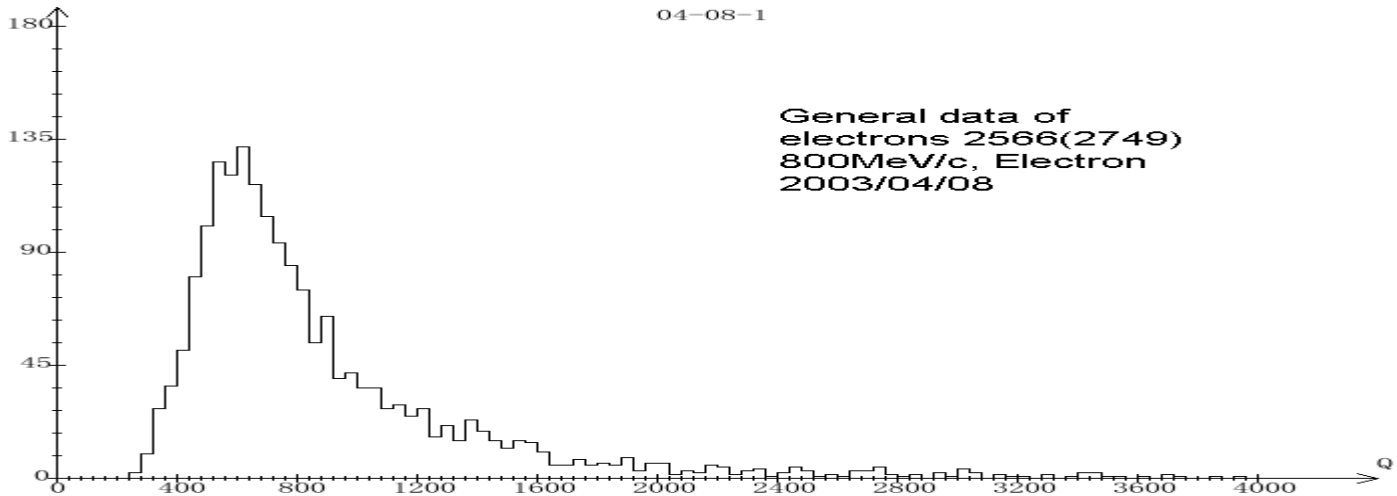
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General data of
electrons 2566(2749)
800MeV/c, Electron
2003/04/08
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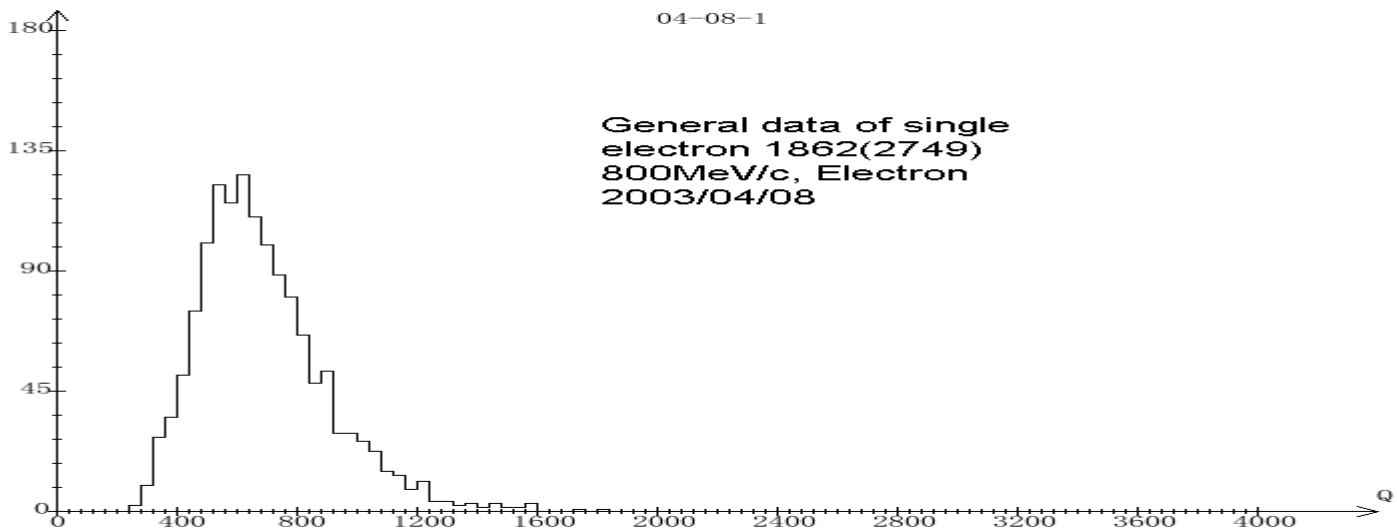
90
45
0
0
400
800
1200
1600
2000
2400
2800
3200
3600
4000
Q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General data of single
electron 1862(2749)
800MeV/c, Electron
2003/04/08
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90
45
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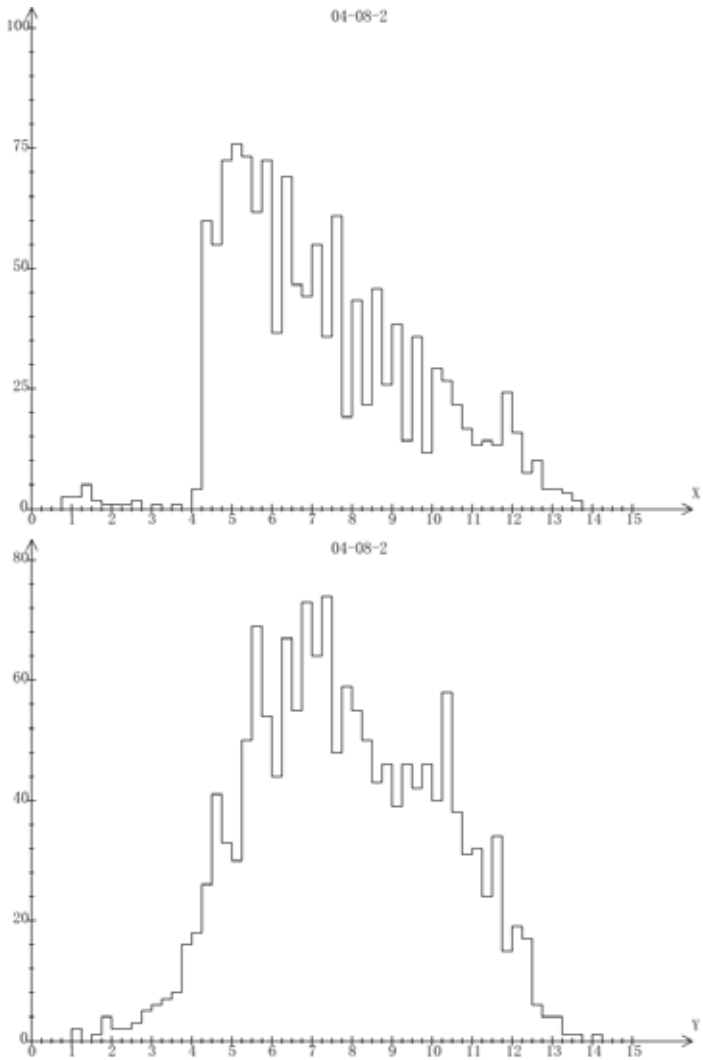
400
800
1200
1600
2000
2400
2800
3200
3600
4000
Q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Y
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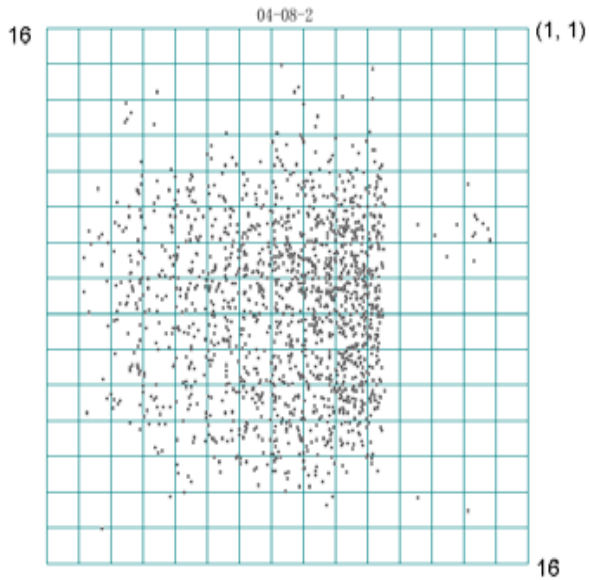
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(1, 1)
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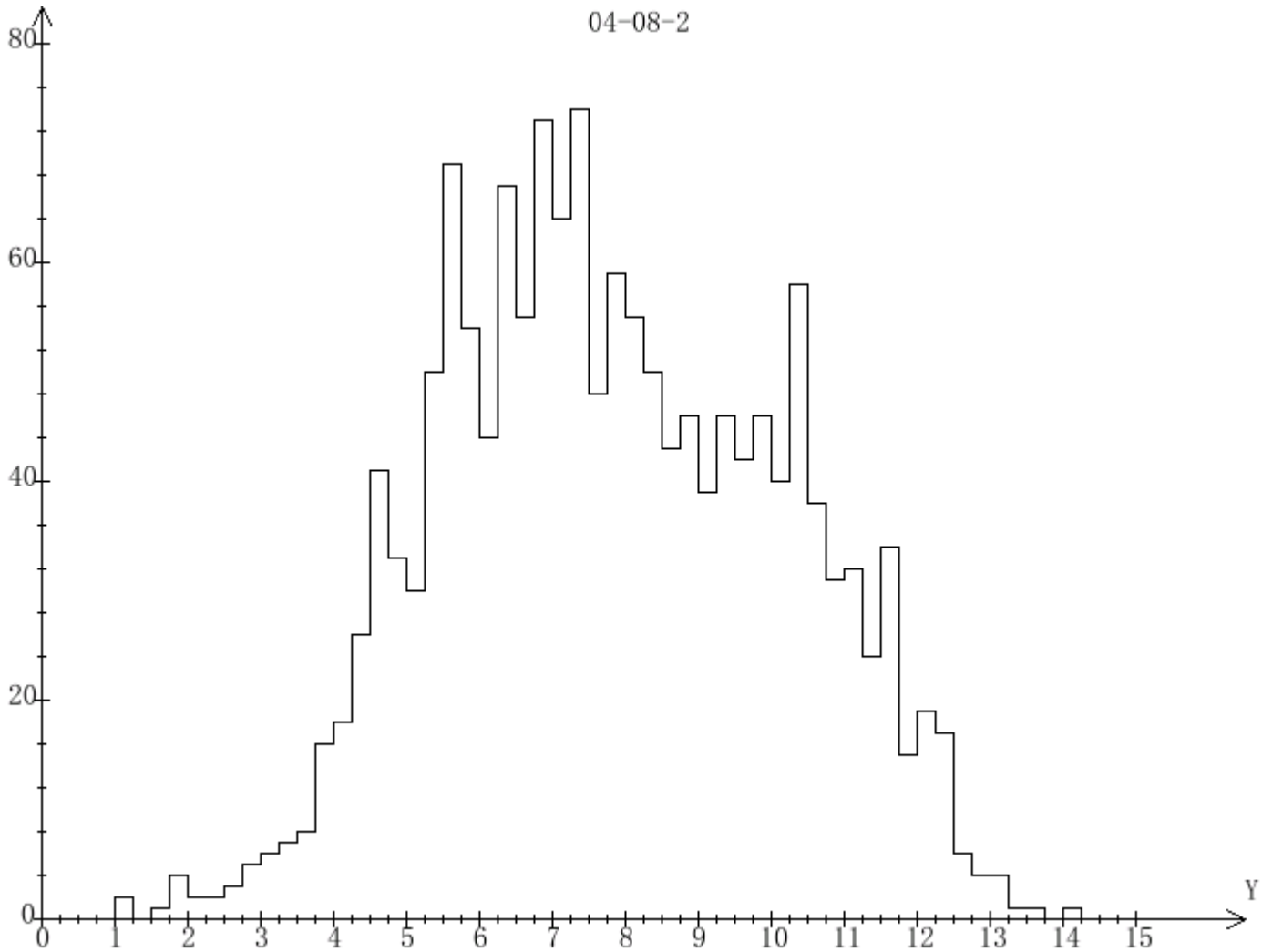
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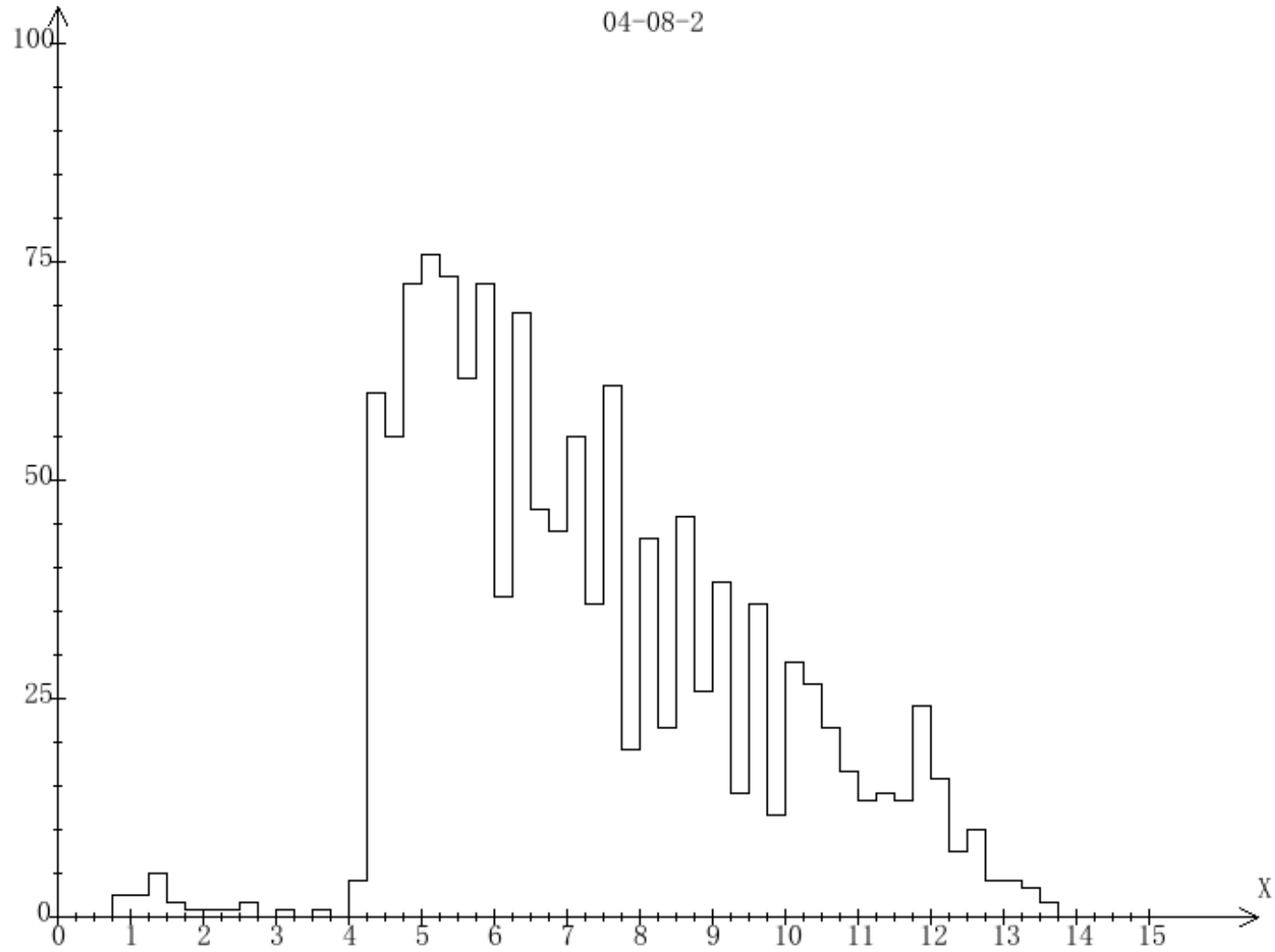
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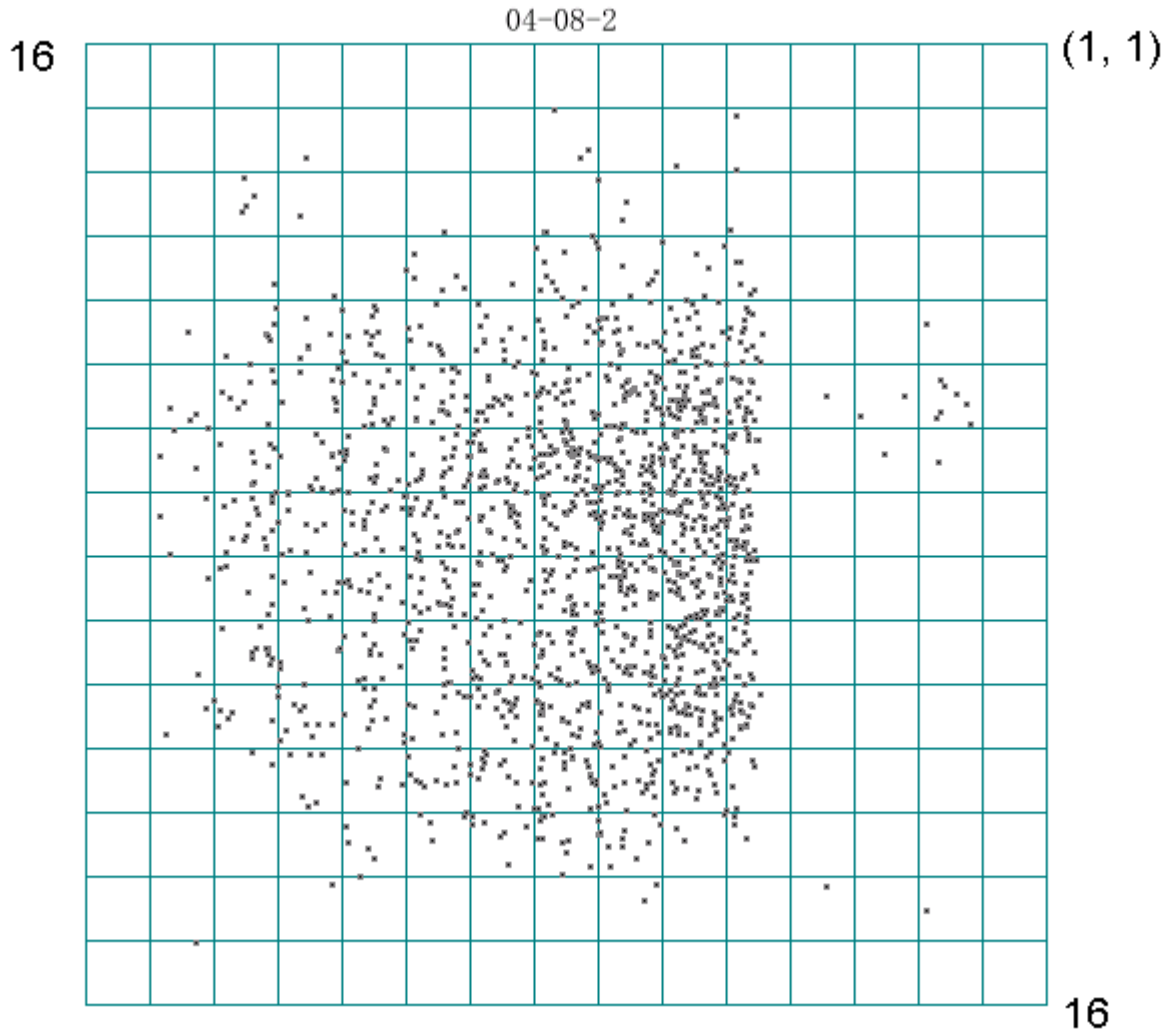
04-08-2
16
(1, 1)
16

COUNT OF SINGLE PARTICLE(now)

3 ×3 CM AREA 1 PER SECEND
WITH 12.5HZ BEAM .

IMPROVEMENT: 50HZ BEAM.
AND WITH (1/9) ×4 = 0.4 PER SECEND
AT 1 ×1 CM AREA.

$\Delta P/P$

- NOW: 2-3% AT 800 MeV/c
- The momentum resolution will be measured at the focal plane with MWPC. (1%) and than with 6-7m vacuum.
- Other methods

Background

- (777-374)/600 per second with 25cm area at 10cm location of the beam.(400MeV/c e- beam)
- (539-374)/600 per second with 25cm area at 18cm location of the beam.(800MeV/c e+ beam)


The electron Branch line at the LINAC end
in the 10#.