Simulation der Extraktion von Ionenstrahlen aus der Quelle

Grundlagen

Hochstromquelle MUCIS

Hochstromquelle MEVVA

Hochstromquelle LASER

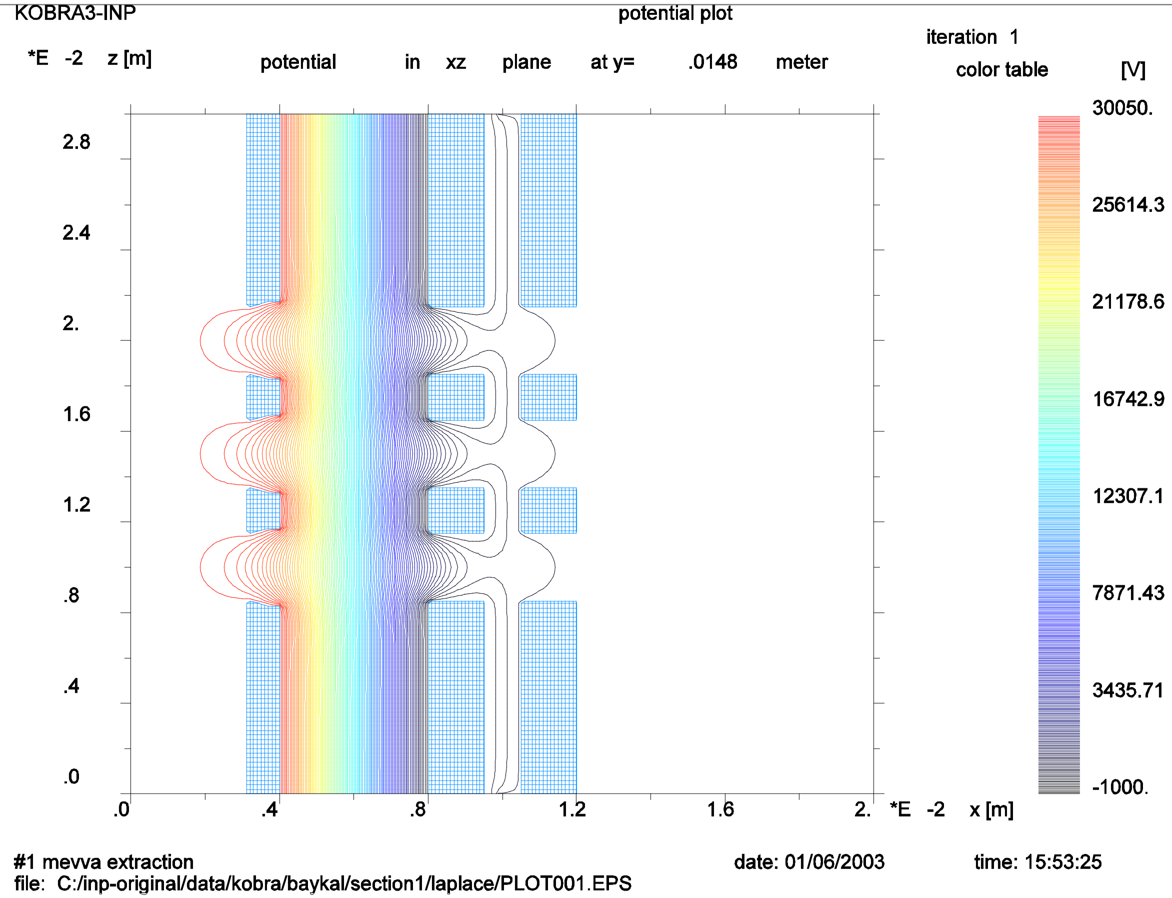
Hochladungsquelle ECR

PIG

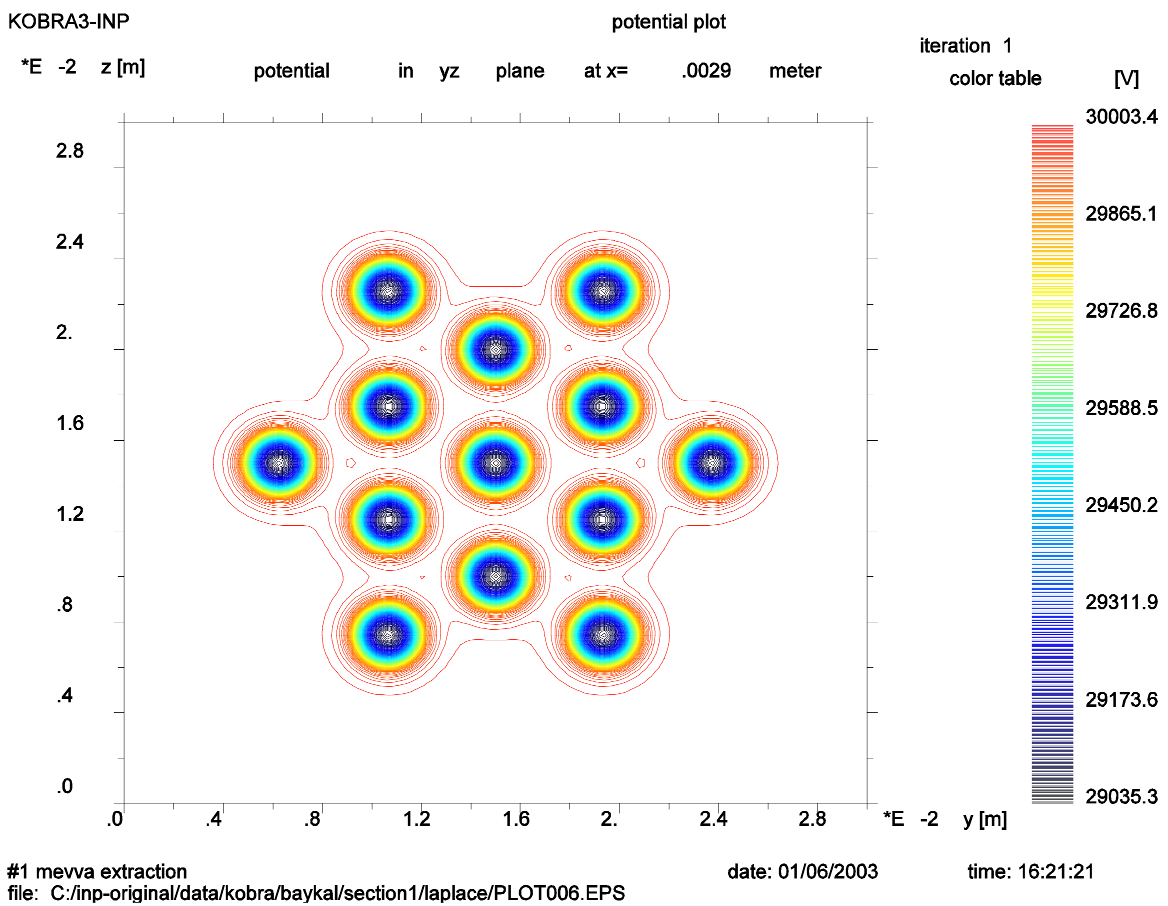
H^-

P.Spädtke

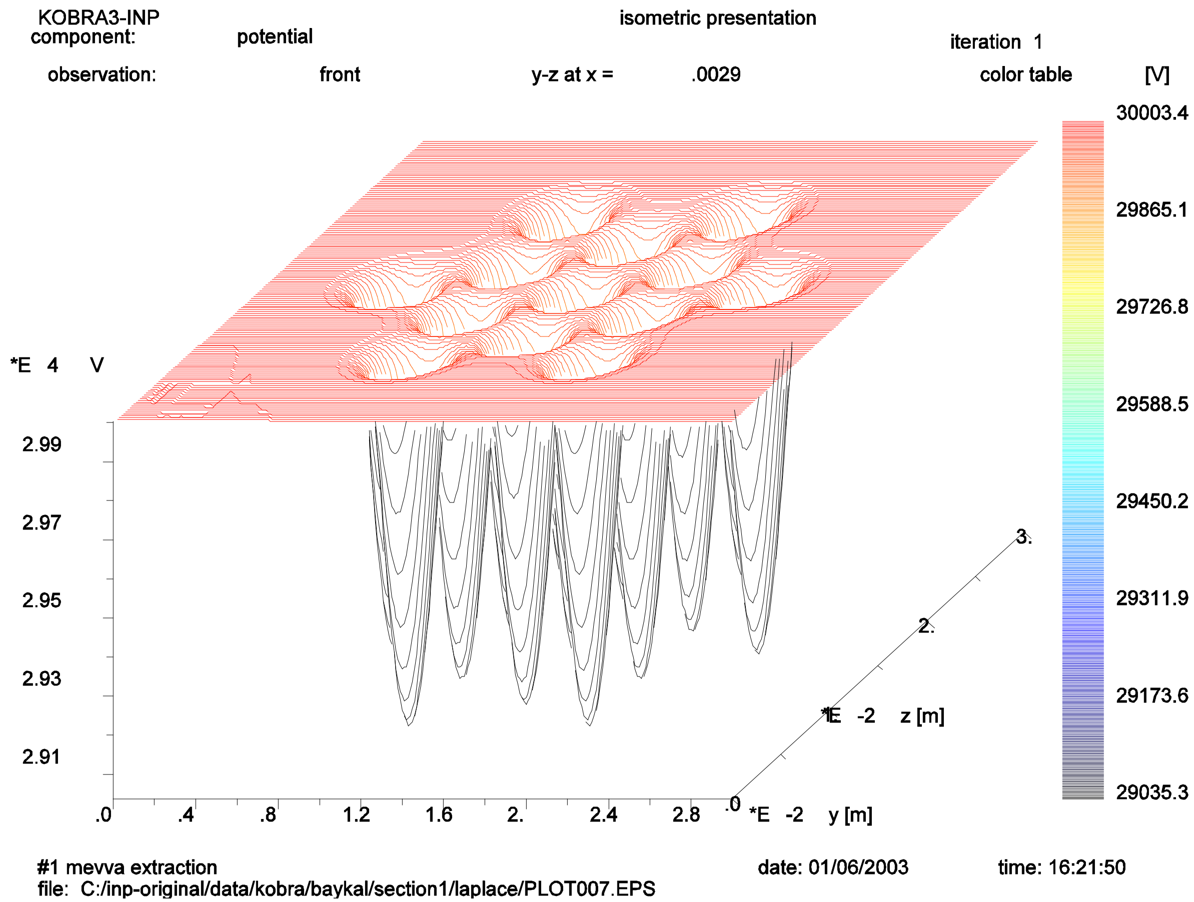
Grundlagen


KOBRA3-INP
potential plot
iteration 1
*E -2 z [m]
potential in xz plane at y= .0148 meter
color table [V]
30050.
25614.3
21178.6
16742.9
12307.1
7871.43
3435.71
-1000.
2.8
2.4
2.
1.6
1.2
.8
.4
.0
.0
.4
.8
1.2
1.6
2.
*E -2 x [m]
#1 mevva extraction
date: 01/06/2003
time: 15:53:25
file: C:/inp-original/data/kobra/baykal/section1/laplace/PLOT001.EPS

Grundlagen

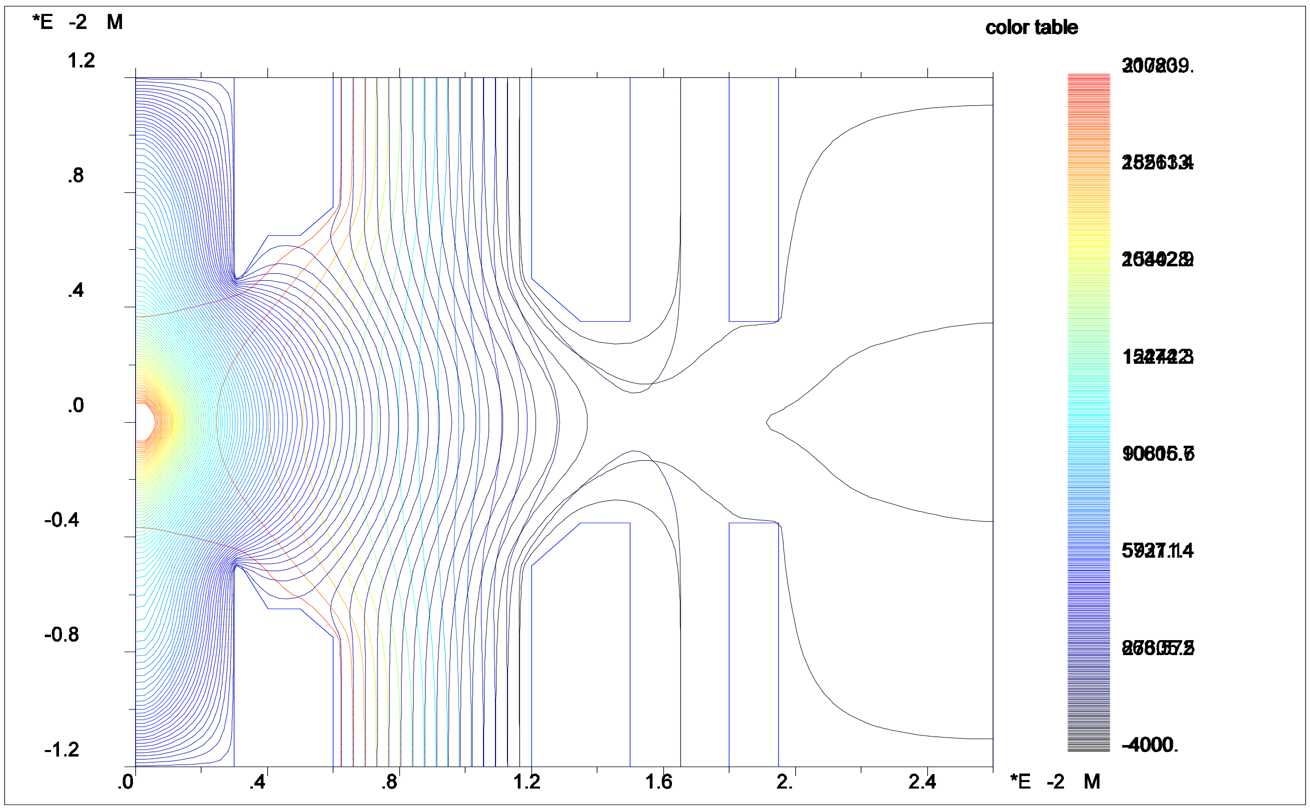

KOBRA3-INP
potential plot
iteration 1
*E -2 z [m]
potential in yz plane at x= .0029 meter
color table [V]
30003.4
29865.1
29726.8
29588.5
29450.2
29311.9
29173.6
29035.3
2.8
2.4
2.
1.6
1.2
.8
.4
.0
.0 .4 .8 1.2 1.6 2. 2.4 2.8 *E -2 y [m]
#1 mevva extraction
date: 01/06/2003
time: 16:21:21
file: C:/inp-original/data/kobra/baykal/section1/laplace/PLOT006.EPS

Grundlagen



KOBRA3-INP
component: potential
isometric presentation
iteration 1
observation: front
y-z at x = .0029
color table [V]
30003.4
29865.1
29726.8
29588.5
29450.2
29311.9
29173.6
29035.3
*E 4 V
2.99
2.97
2.95
2.93
2.91
.0
.4
.8
1.2
1.6
2.
2.4
2.8
0
*E -2 y [m]
*E -2 z [m]
2.
3.
#1 mevva extraction
file: C:/inp-original/data/kobra/baykal/section1/laplace/PLOT007.EPS
date: 01/06/2003
time: 16:21:50

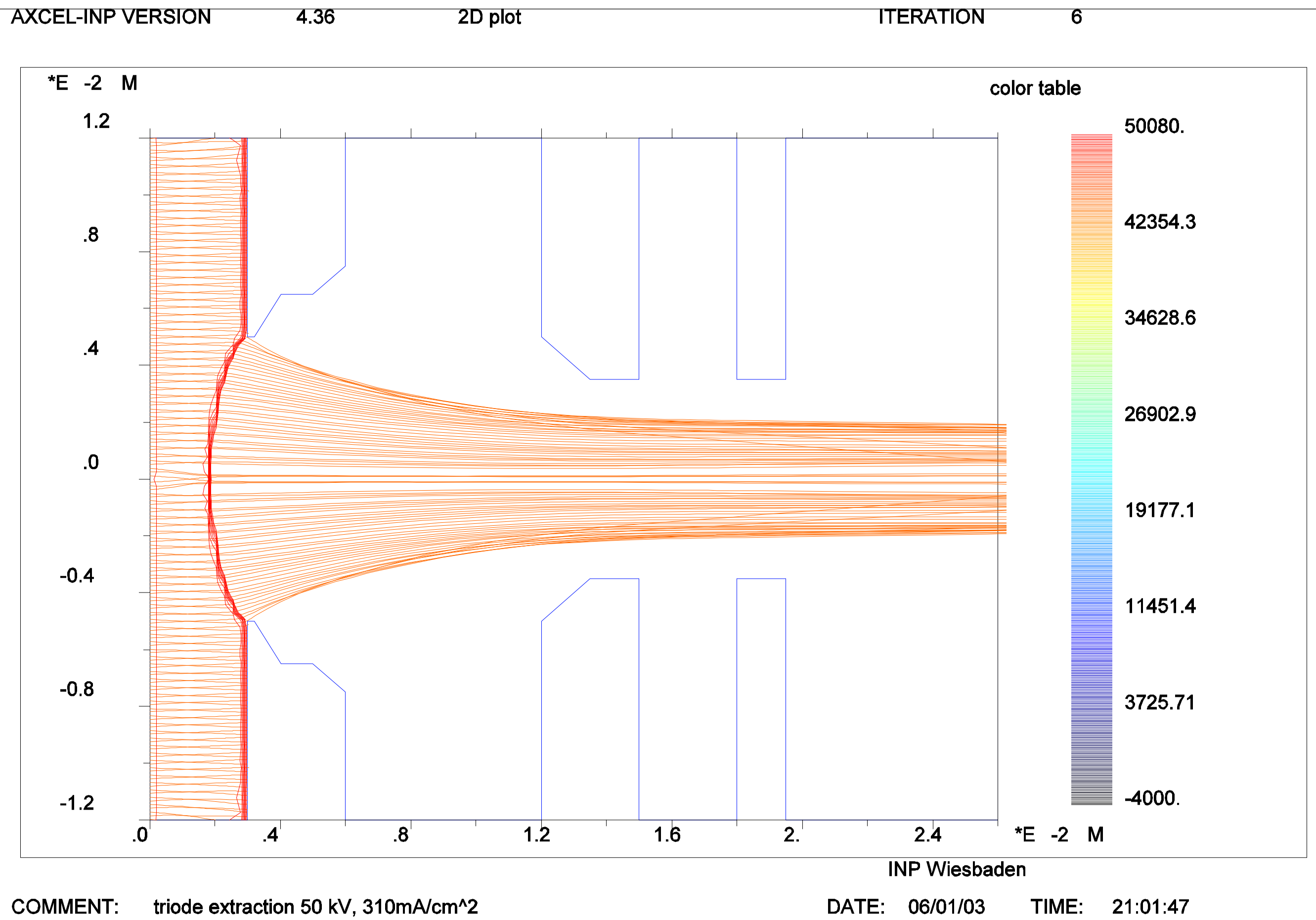
AXCEL-INP VERSION 4.36 2D plot ITERATION 8



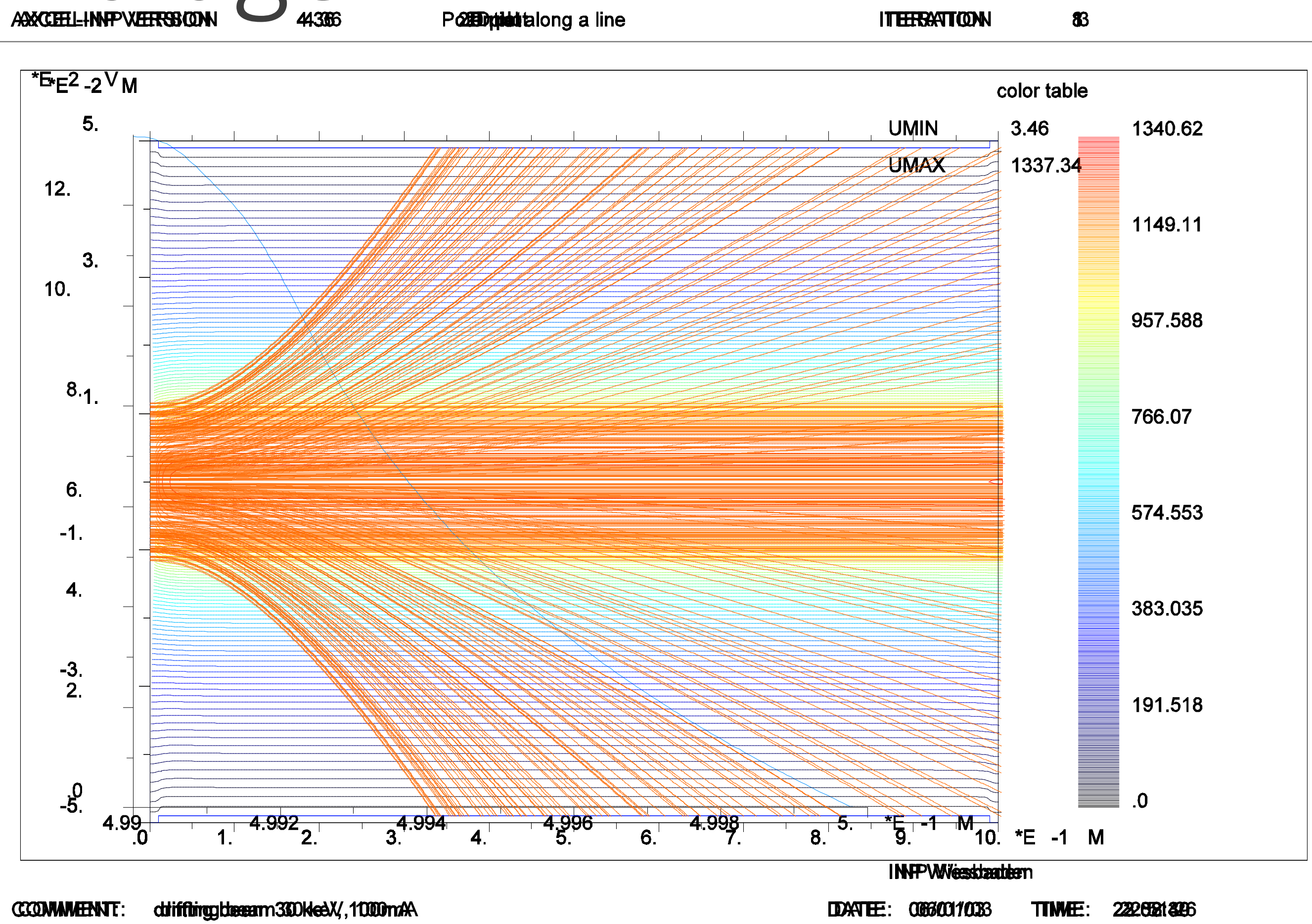
INP Wiesbaden

COMMENT: triode extraction 30 kV, 310mA/cm^2 DATE: 06/01/03 TIME: 20:09:45

Grundlagen


AXCEL-INP VERSION 4.36 2D plot ITERATION 6
*E -2 M
1.2
.8
.4
.0
-0.4
-0.8
-1.2
.0
.4
.8
1.2
1.6
2.
2.4
*E -2 M
color table
50080.
42354.3
34628.6
26902.9
19177.1
11451.4
3725.71
-4000.
INP Wiesbaden
COMMENT: triode extraction 50 kV, 310mA/cm^2
DATE: 06/01/03 TIME: 21:01:47

Grundlagen



MUCIS

Protonen

50 kV Extraktionsspannung, 6 mm

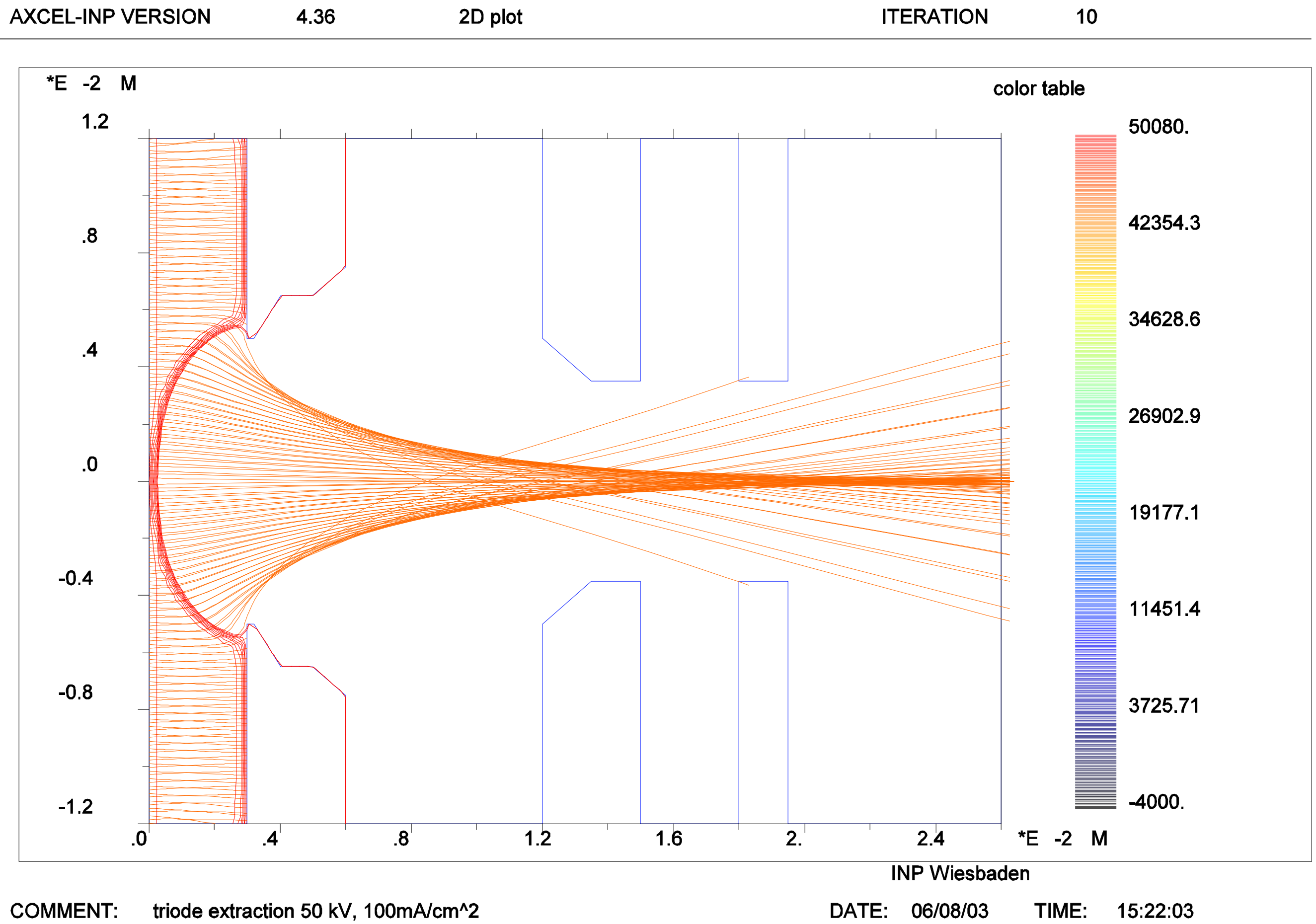
Elektronentemperatur 5 eV

Startenergie der Ionen 0.1 eV

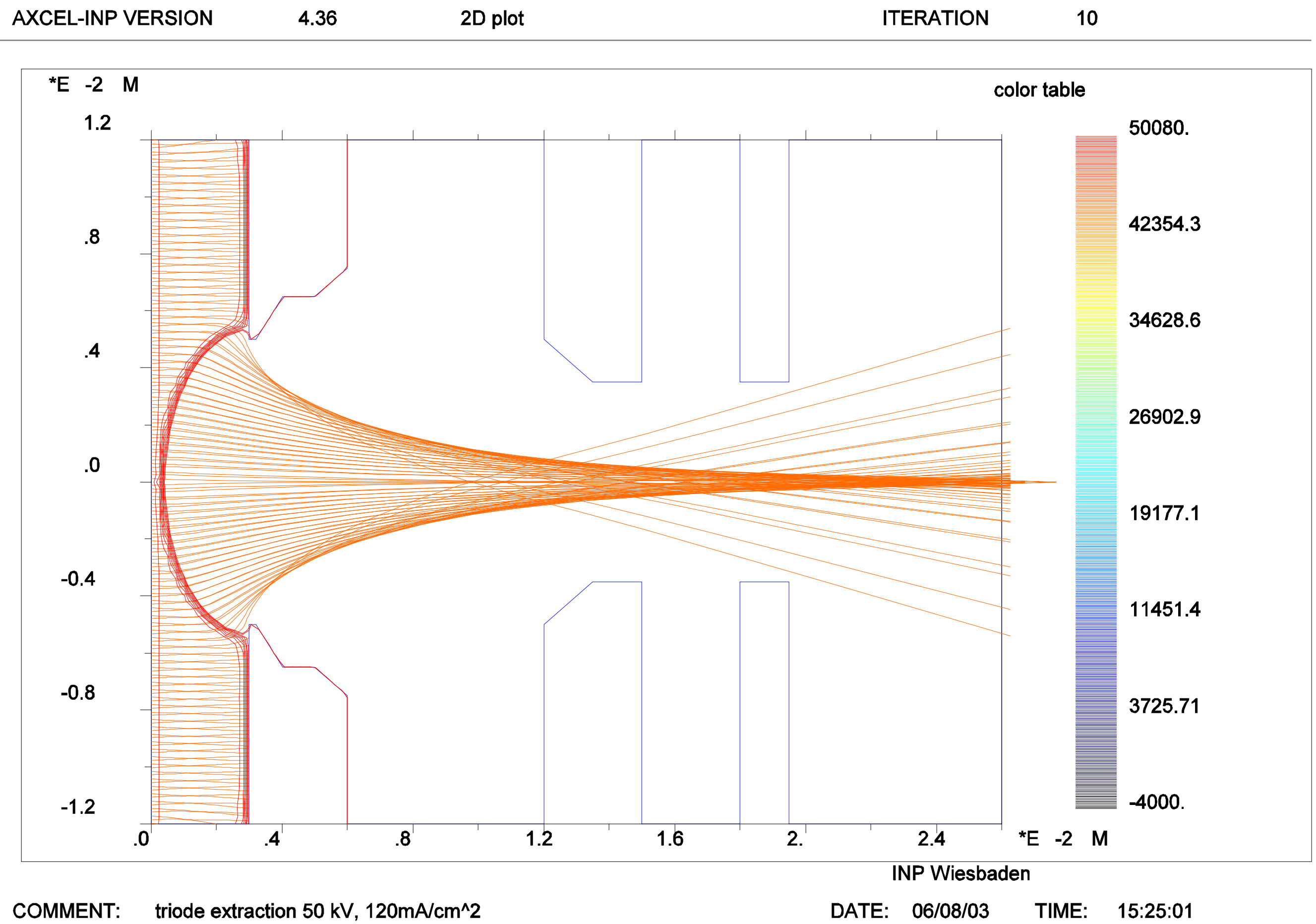
Plasmapotential 80 V

Stromdichte 100 ... 420 mA/cm^2

MUCIS

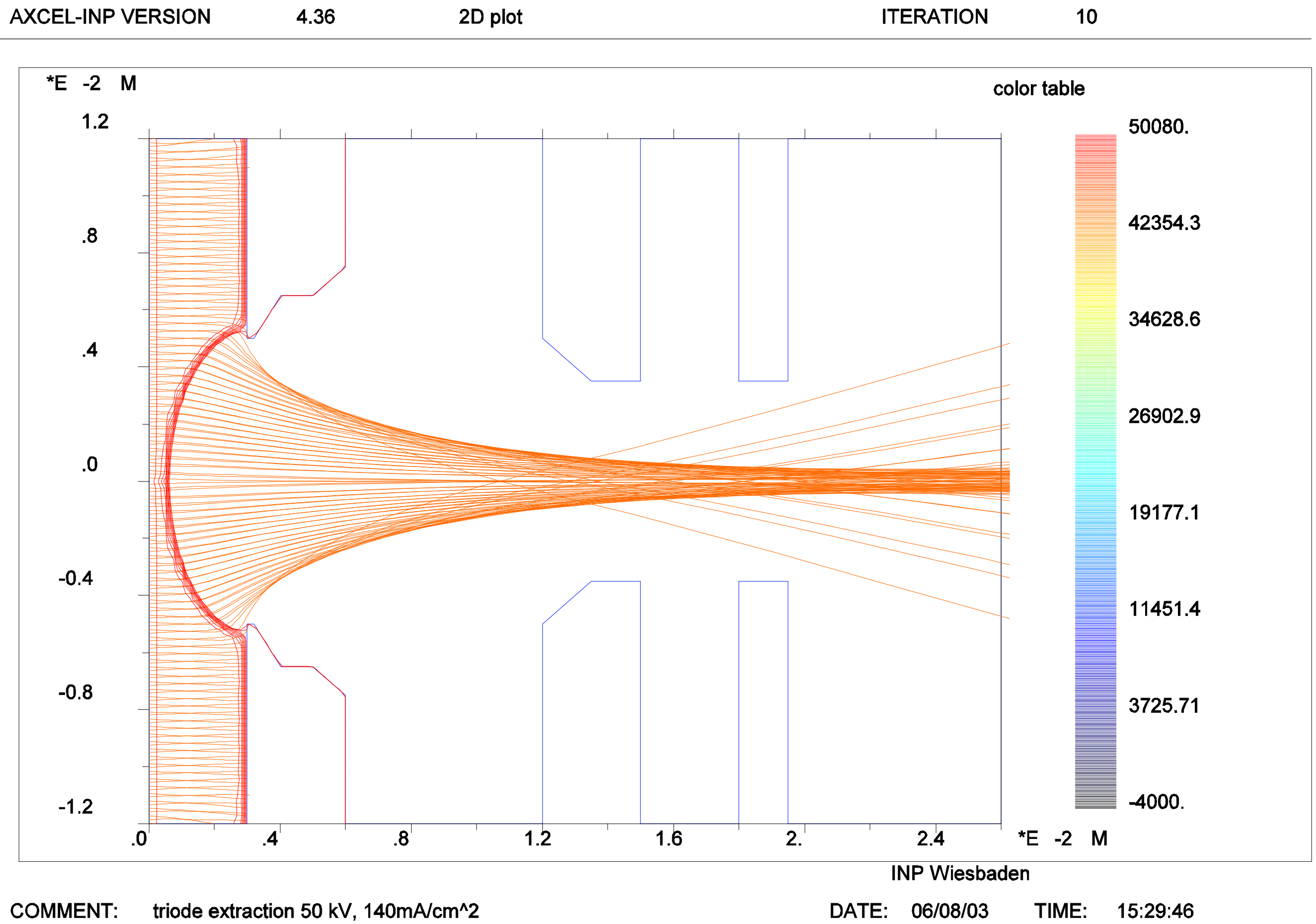

AXCEL-INP VERSION 4.36 2D plot ITERATION 10
*E -2 M
color table
50080.
42354.3
34628.6
26902.9
19177.1
11451.4
3725.71
-4000.
1.2
.8
.4
.0
-0.4
-0.8
-1.2
.0
.4
.8
1.2
1.6
2.
2.4
*E -2 M
INP Wiesbaden
COMMENT: triode extraction 50 kV, 100mA/cm^2
DATE: 06/08/03 TIME: 15:22:03

MUCIS

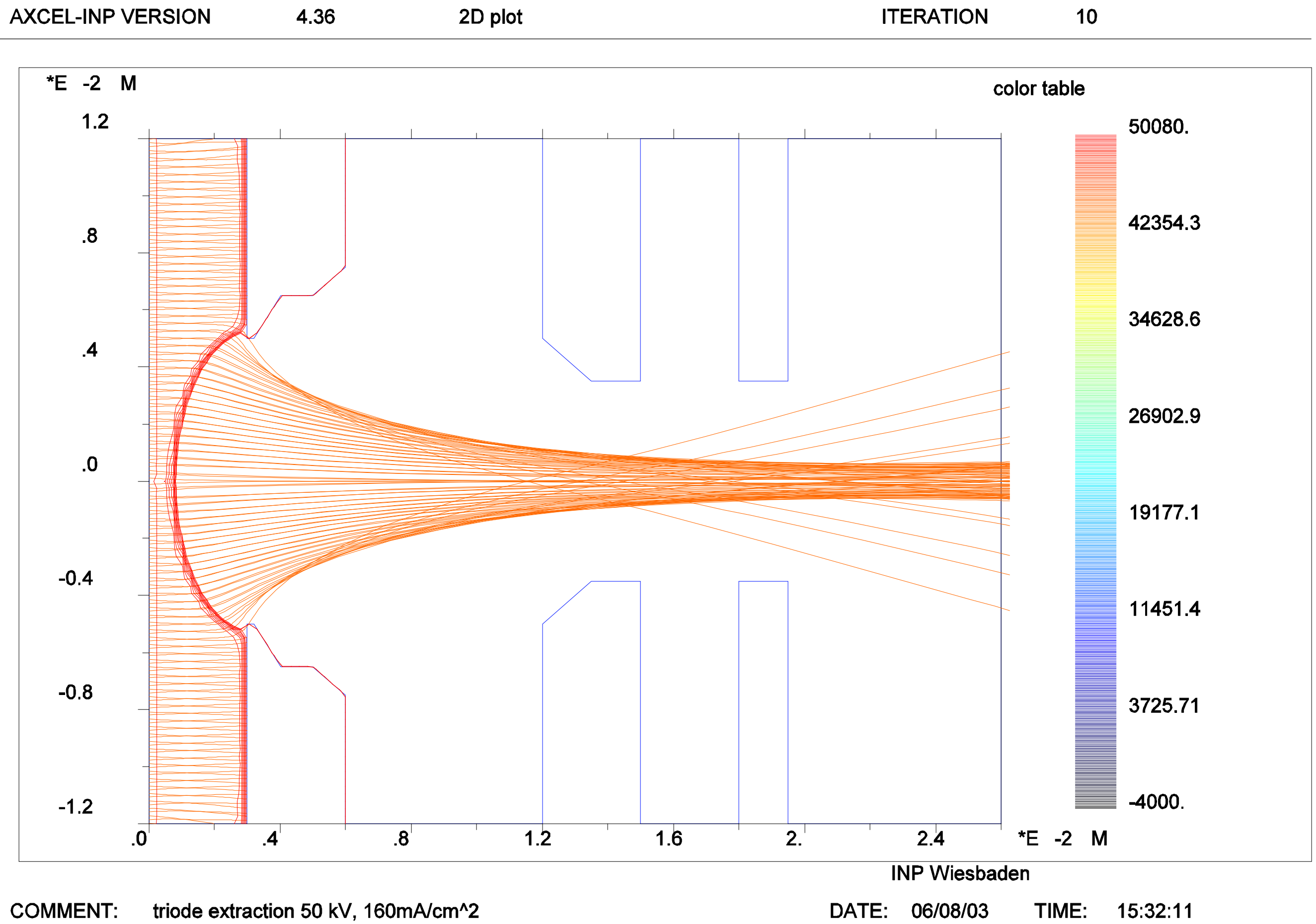


AXCEL-INP VERSION 4.36
2D plot
ITERATION 10
*E -2 M
color table
1.2
.8
.4
.0
-0.4
-0.8
-1.2
50080.
42354.3
34628.6
26902.9
19177.1
11451.4
3725.71
-4000.
.0
.4
.8
1.2
1.6
2.
2.4
*E -2 M
INP Wiesbaden
COMMENT: triode extraction 50 kV, 120mA/cm^2
DATE: 06/08/03
TIME: 15:25:01

MUCIS


AXCEL-INP VERSION
4.36
2D plot
ITERATION
10
*E -2 M
color table
1.2
.8
.4
.0
-0.4
-0.8
-1.2
.0
.4
.8
1.2
1.6
2.
2.4
*E -2 M
50080.
42354.3
34628.6
26902.9
19177.1
11451.4
3725.71
-4000.
INP Wiesbaden
COMMENT: triode extraction 50 kV, 140mA/cm^2
DATE: 06/08/03
TIME: 15:29:46

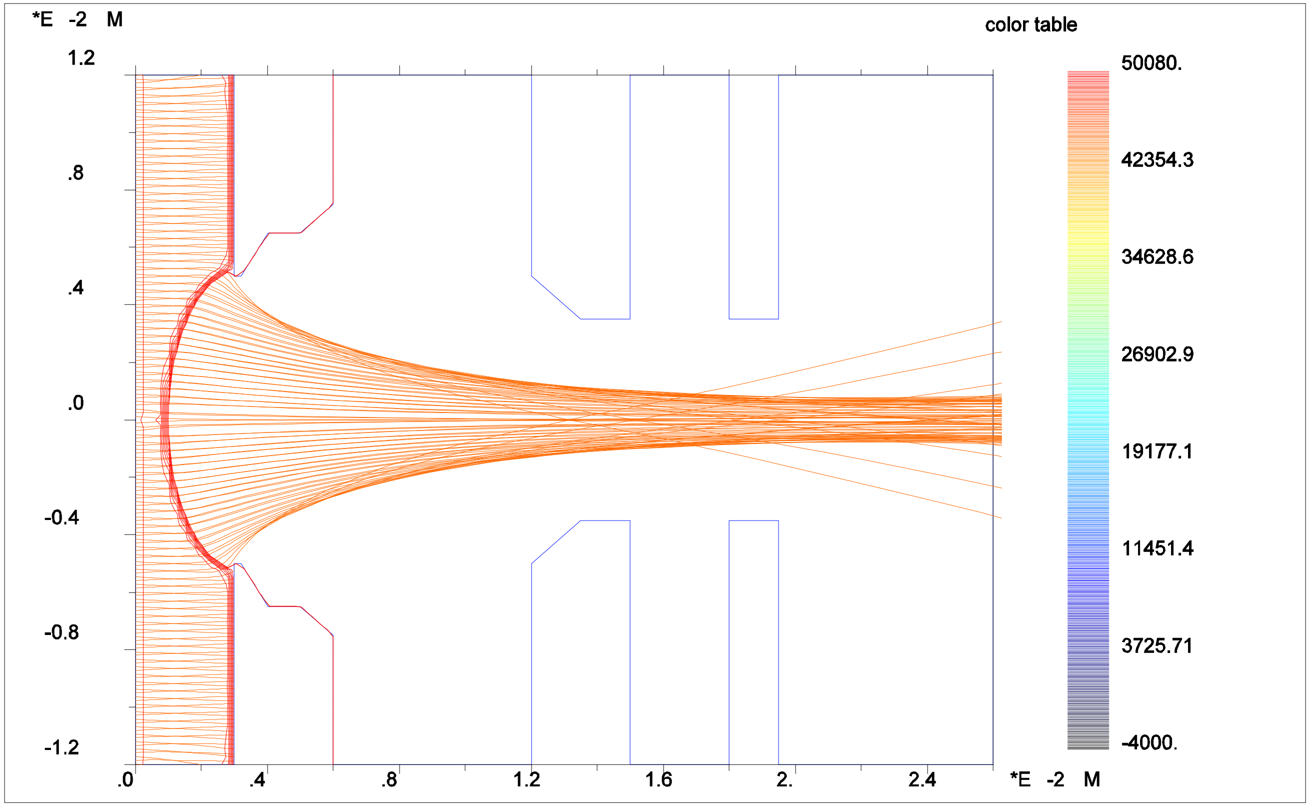
MUCIS



AXCEL-INP VERSION 4.36 2D plot ITERATION 10
*E -2 M
color table
1.2
.8
.4
.0
-0.4
-0.8
-1.2
.0
.4
.8
1.2
1.6
2.
2.4
*E -2 M
50080.
42354.3
34628.6
26902.9
19177.1
11451.4
3725.71
-4000.
INP Wiesbaden
COMMENT: triode extraction 50 kV, 160mA/cm^2
DATE: 06/08/03 TIME: 15:32:11

MUCIS

AXCEL-INP VERSION 4.36 2D plot ITERATION 10

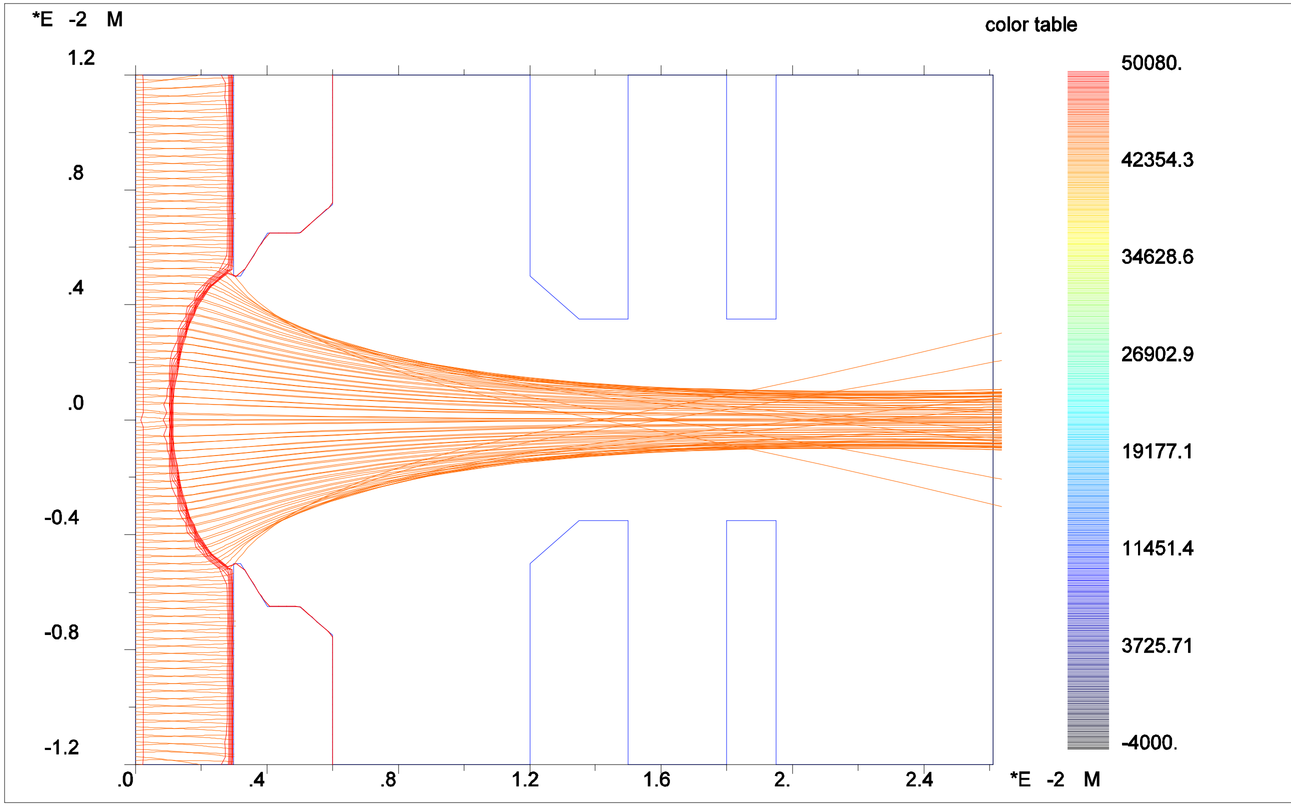


INP Wiesbaden

COMMENT: triode extraction 50 kV, 180mA/cm^2 DATE: 06/08/03 TIME: 15:34:26

MUCIS

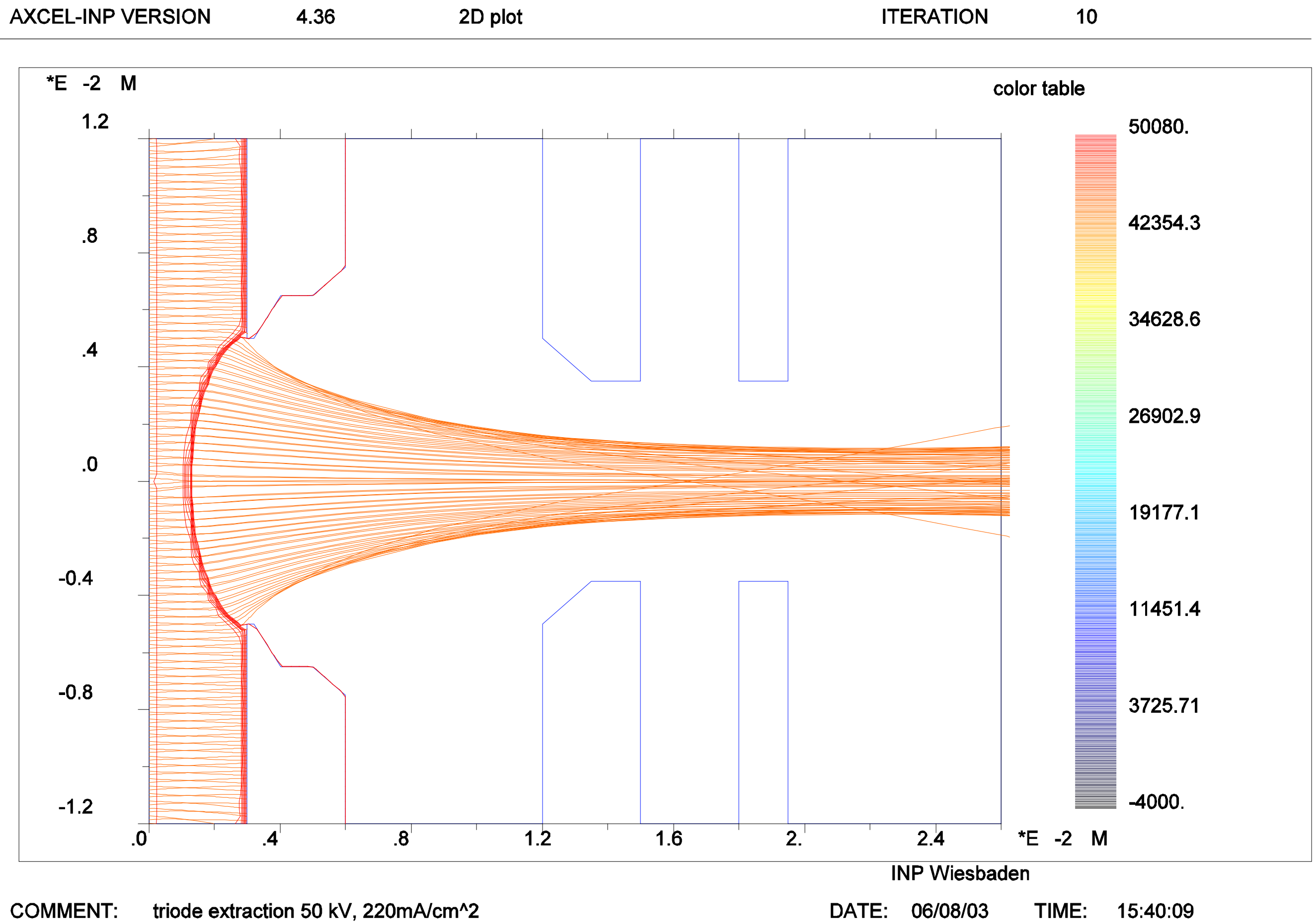
AXCEL-INP VERSION 4.36 2D plot ITERATION 10



INP Wiesbaden

COMMENT: triode extraction 50 kV, 200mA/cm^2 DATE: 06/08/03 TIME: 15:37:49

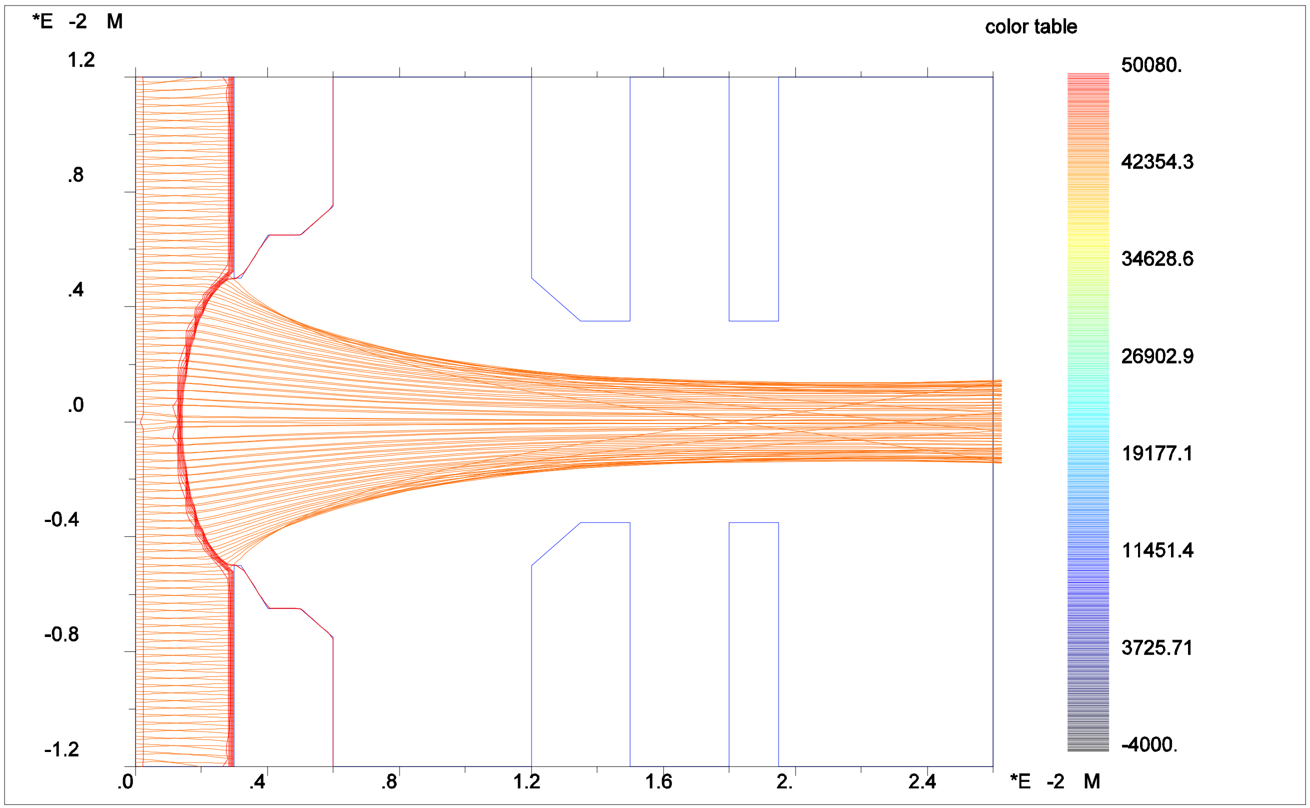
MUCIS



AXCEL-INP VERSION 4.36 2D plot ITERATION 10
*E -2 M
color table
50080.
42354.3
34628.6
26902.9
19177.1
11451.4
3725.71
-4000.
1.2
.8
.4
.0
-0.4
-0.8
-1.2
.0
.4
.8
1.2
1.6
2.
2.4
*E -2 M
INP Wiesbaden
COMMENT: triode extraction 50 kV, 220mA/cm^2
DATE: 06/08/03 TIME: 15:40:09

MUCIS

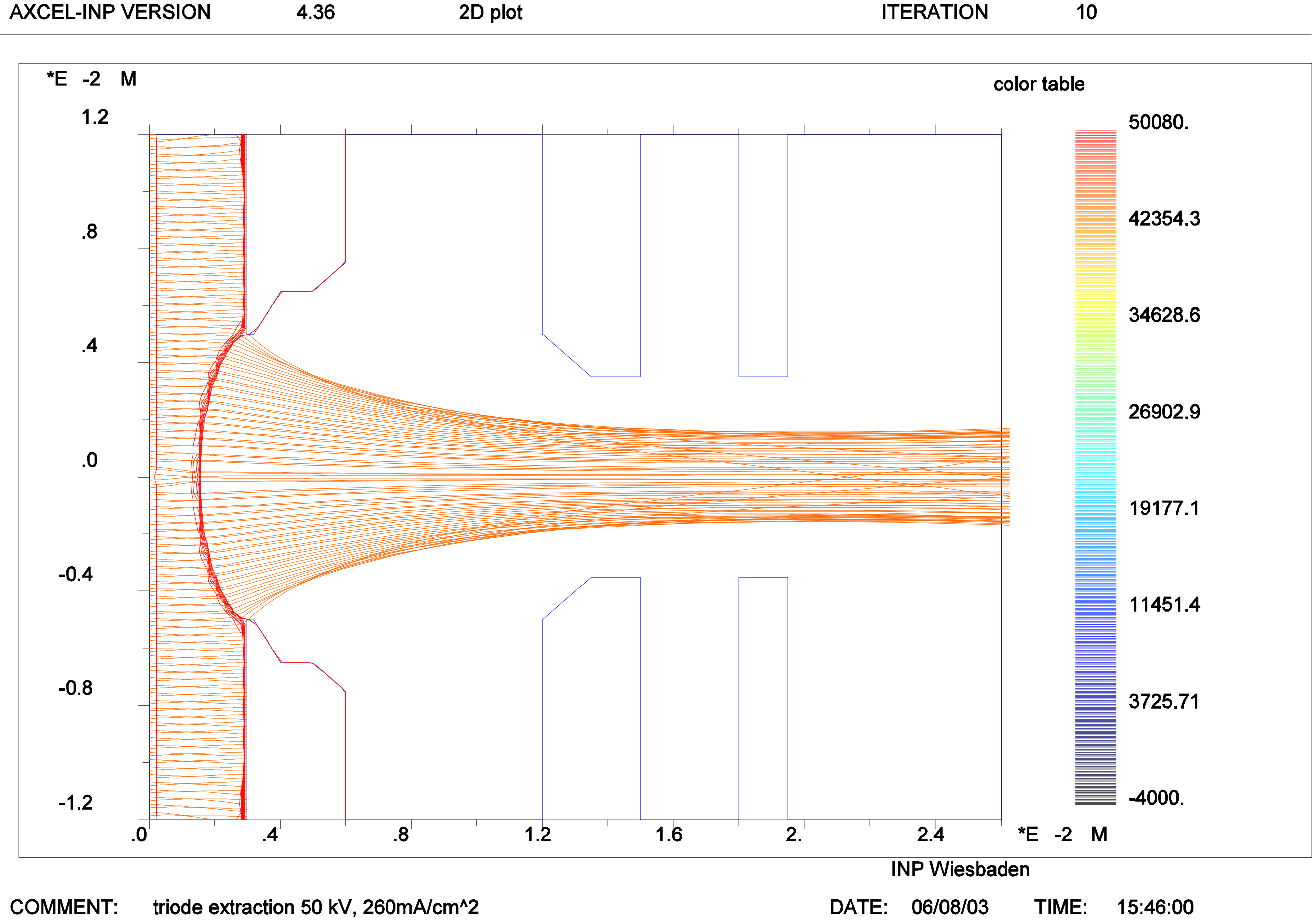
AXCEL-INP VERSION 4.36 2D plot ITERATION 10



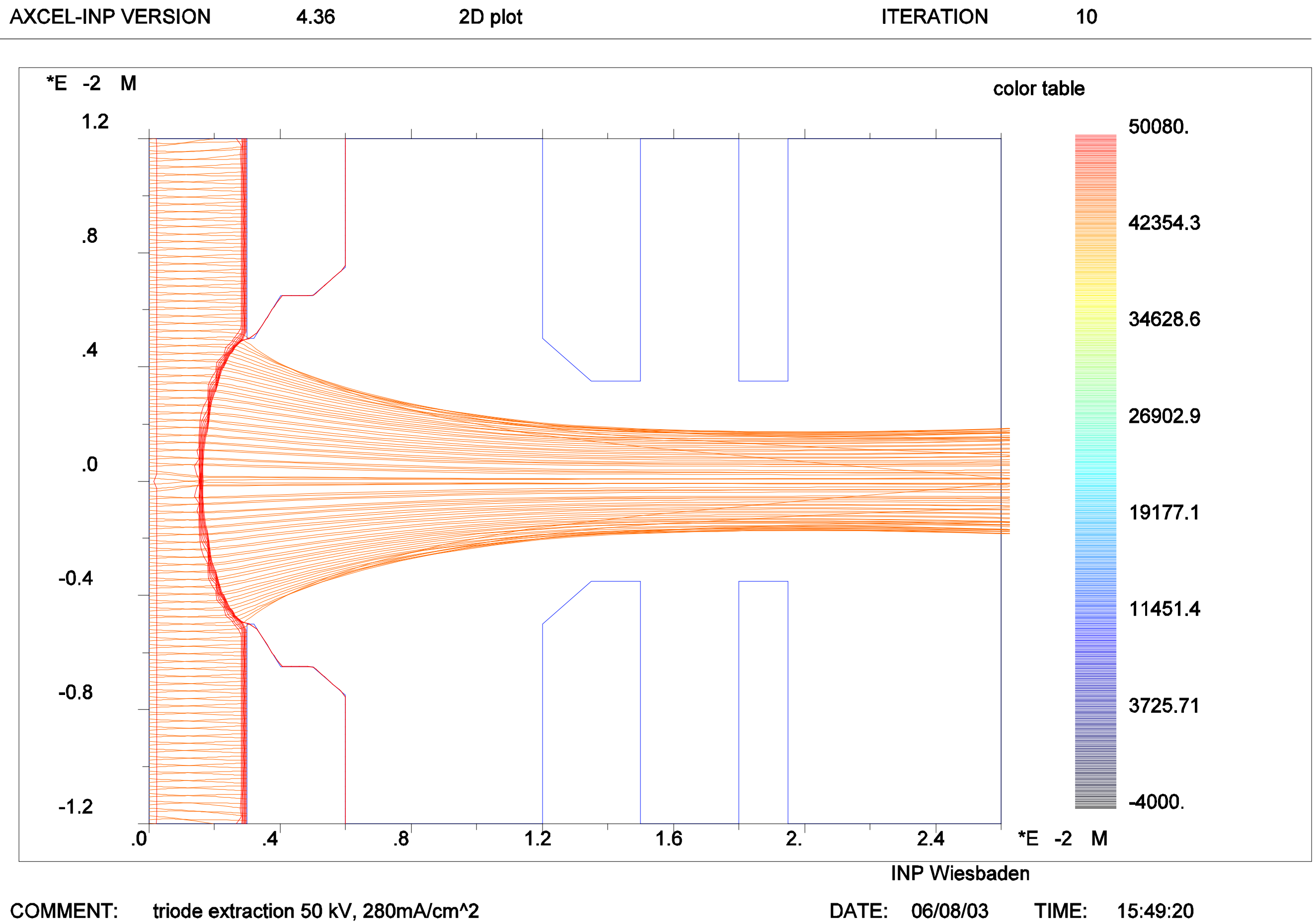
INP Wiesbaden

COMMENT: triode extraction 50 kV, 240mA/cm^2 DATE: 06/08/03 TIME: 15:43:38

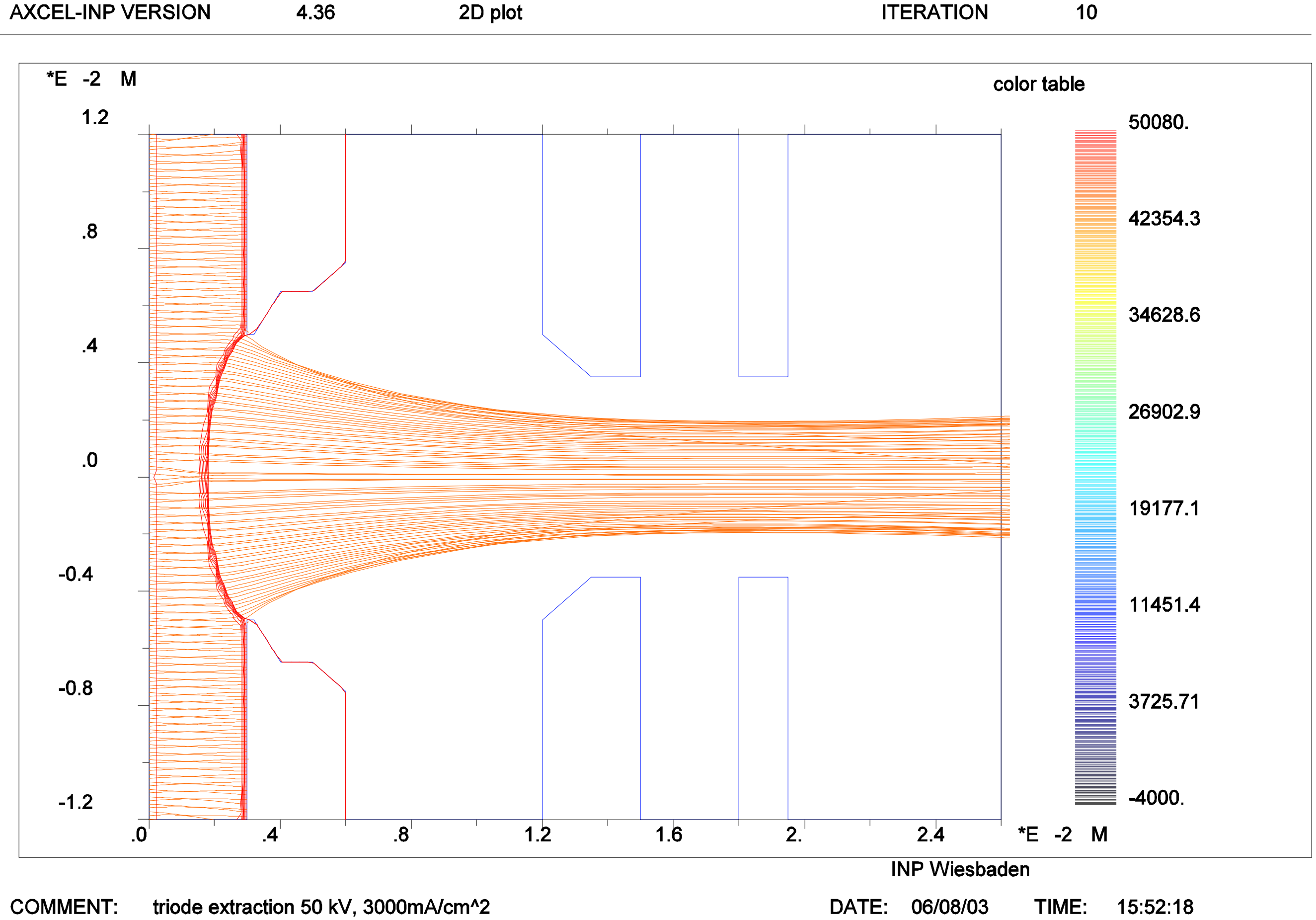
MUCIS


AXCEL-INP VERSION 4.36 2D plot ITERATION 10
*E -2 M
color table
1.2
.8
.4
.0
-0.4
-0.8
-1.2
.0 .4 .8 1.2 1.6 2. 2.4 *E -2 M
50080.
42354.3
34628.6
26902.9
19177.1
11451.4
3725.71
-4000.
INP Wiesbaden
COMMENT: triode extraction 50 kV, 260mA/cm^2
DATE: 06/08/03 TIME: 15:46:00

MUCIS

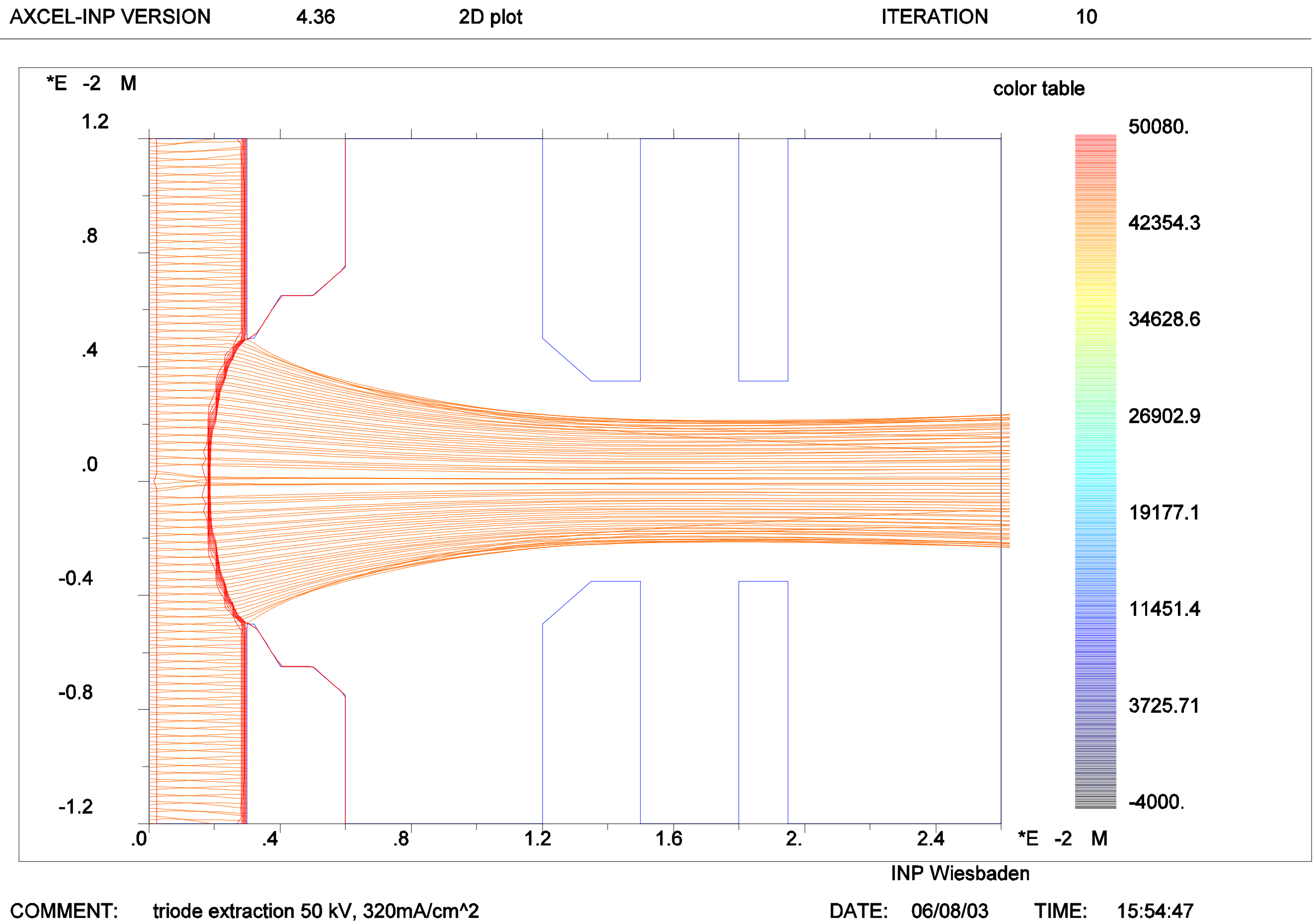

AXCEL-INP VERSION 4.36 2D plot ITERATION 10
*E -2 M
color table
1.2
.8
.4
.0
-0.4
-0.8
-1.2
.0
.4
.8
1.2
1.6
2.
2.4
*E -2 M
50080.
42354.3
34628.6
26902.9
19177.1
11451.4
3725.71
-4000.
INP Wiesbaden
COMMENT: triode extraction 50 kV, 280mA/cm^2
DATE: 06/08/03 TIME: 15:49:20

MUCIS



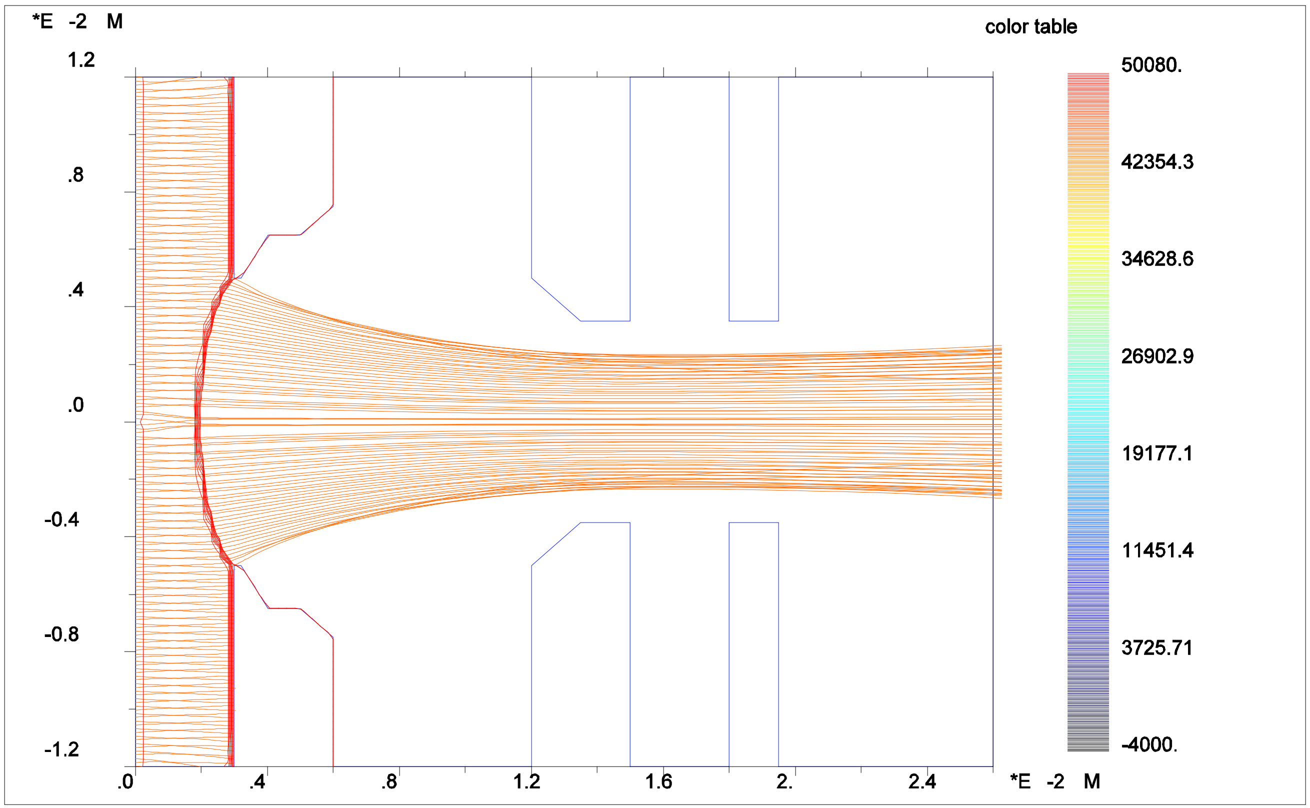
AXCEL-INP VERSION 4.36 2D plot ITERATION 10
*E -2 M
color table
1.2
.8
.4
.0
-0.4
-0.8
-1.2
.0
.4
.8
1.2
1.6
2.
2.4
*E -2 M
50080.
42354.3
34628.6
26902.9
19177.1
11451.4
3725.71
-4000.
INP Wiesbaden
COMMENT: triode extraction 50 kV, 3000mA/cm^2
DATE: 06/08/03 TIME: 15:52:18

MUCIS


AXCEL-INP VERSION 4.36 2D plot ITERATION 10
*E -2 M
color table
1.2
.8
.4
.0
-0.4
-0.8
-1.2
.0 .4 .8 1.2 1.6 2. 2.4 *E -2 M
50080.
42354.3
34628.6
26902.9
19177.1
11451.4
3725.71
-4000.
INP Wiesbaden
COMMENT: triode extraction 50 kV, 320mA/cm^2
DATE: 06/08/03 TIME: 15:54:47

MUCIS

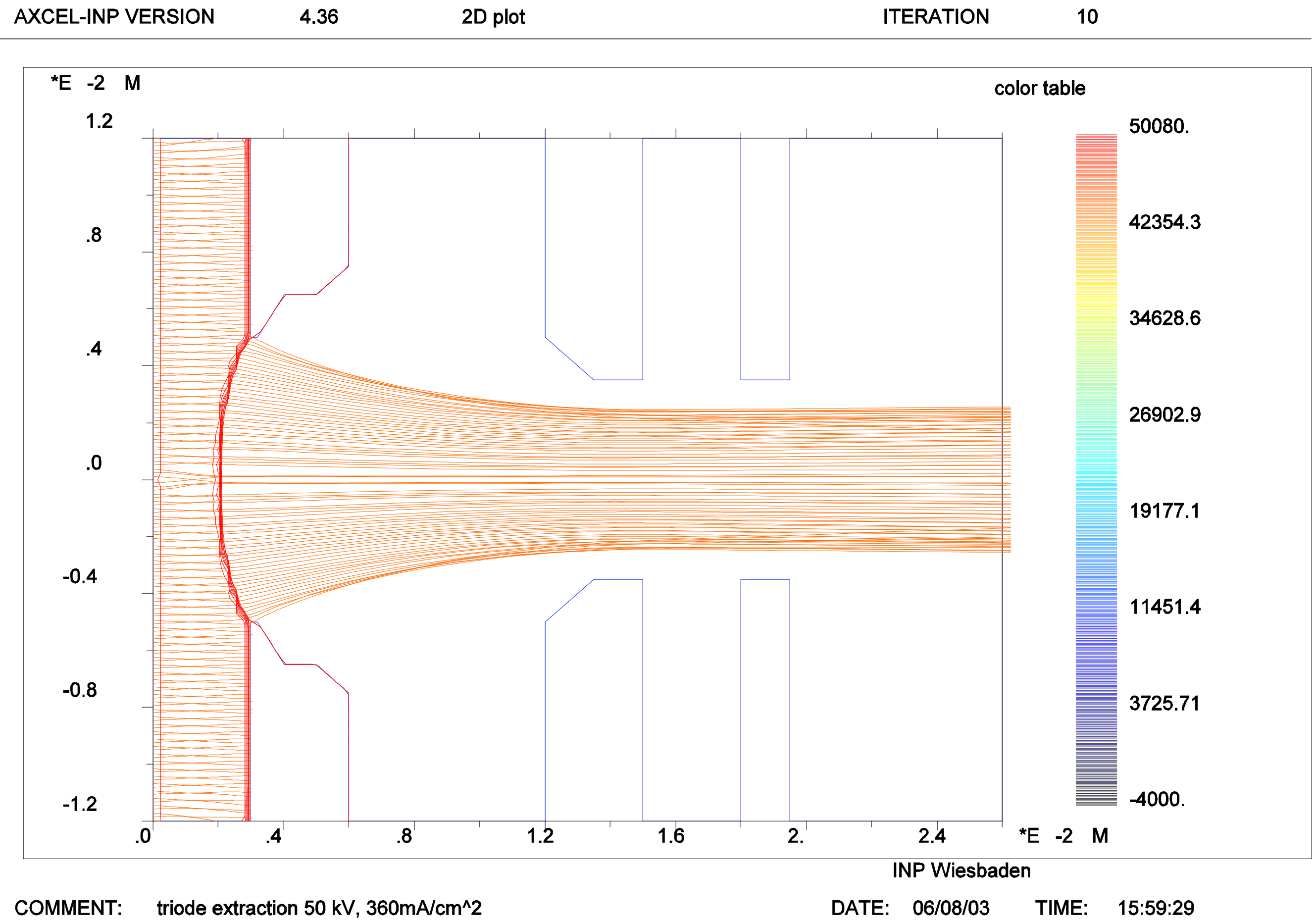
AXCEL-INP VERSION 4.36 2D plot ITERATION 10



INP Wiesbaden

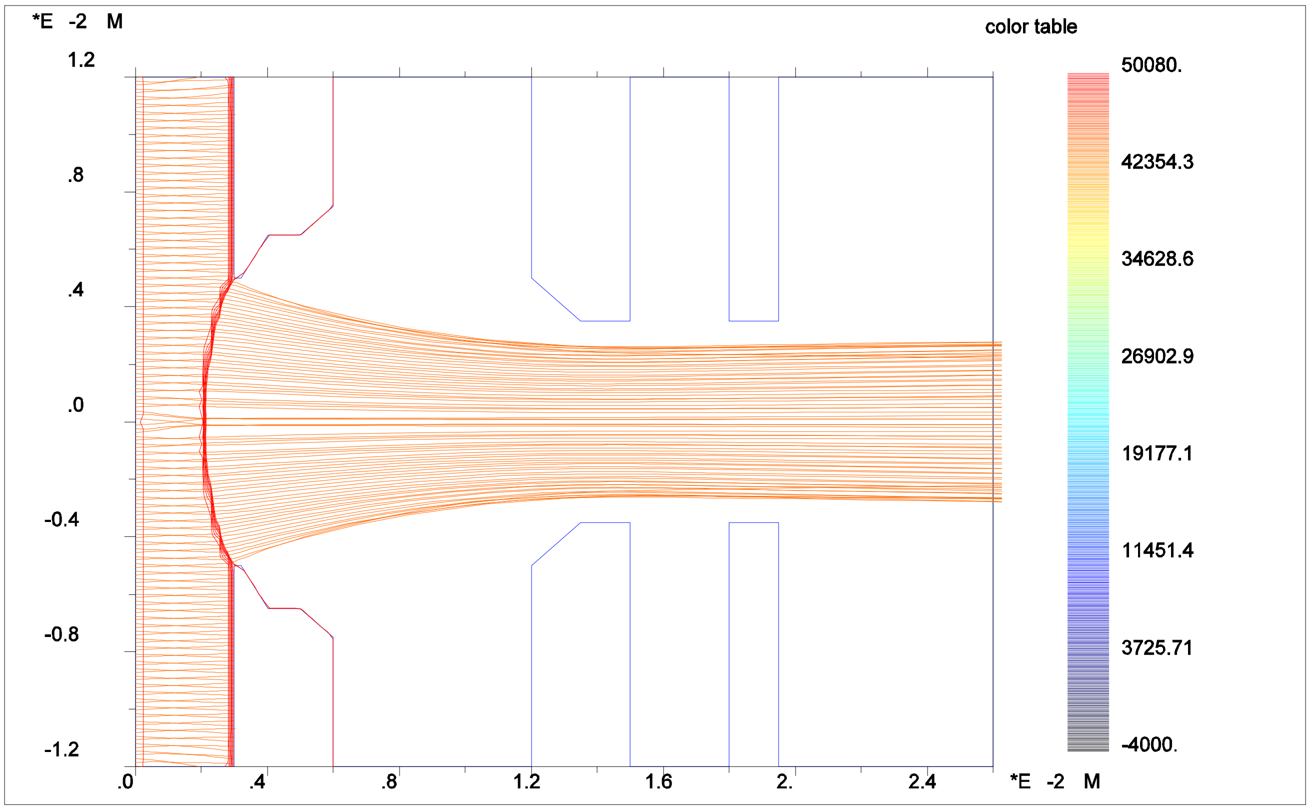
COMMENT: triode extraction 50 kV, 340mA/cm^2 DATE: 06/08/03 TIME: 15:56:55

MUCIS


AXCEL-INP VERSION 4.36 2D plot ITERATION 10
*E -2 M
color table
1.2
.8
.4
.0
-0.4
-0.8
-1.2
.0
.4
.8
1.2
1.6
2.
2.4
*E -2 M
50080.
42354.3
34628.6
26902.9
19177.1
11451.4
3725.71
-4000.
INP Wiesbaden
COMMENT: triode extraction 50 kV, 360mA/cm^2
DATE: 06/08/03 TIME: 15:59:29

MUCIS

AXCEL-INP VERSION 4.36 2D plot ITERATION 10

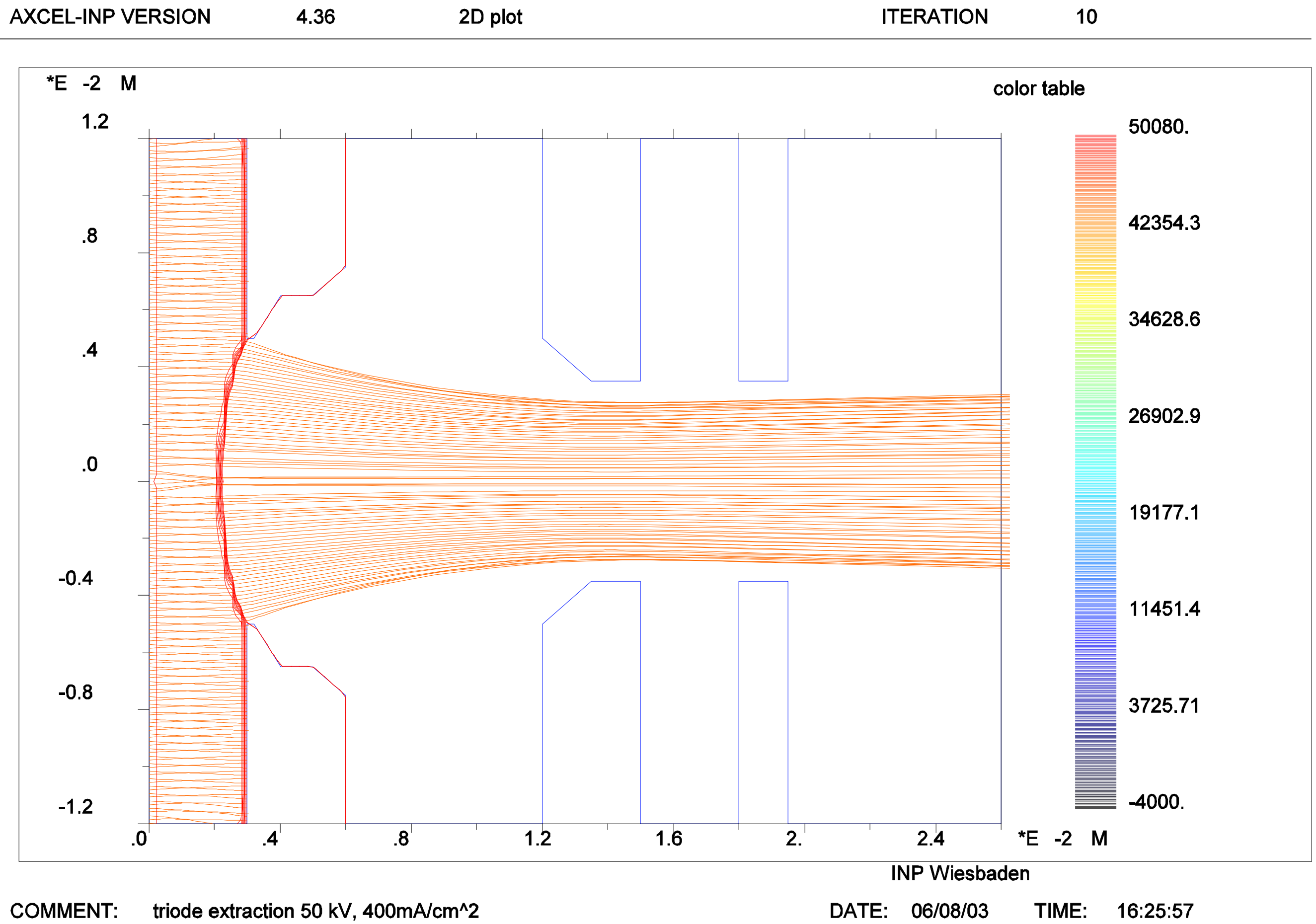


INP Wiesbaden

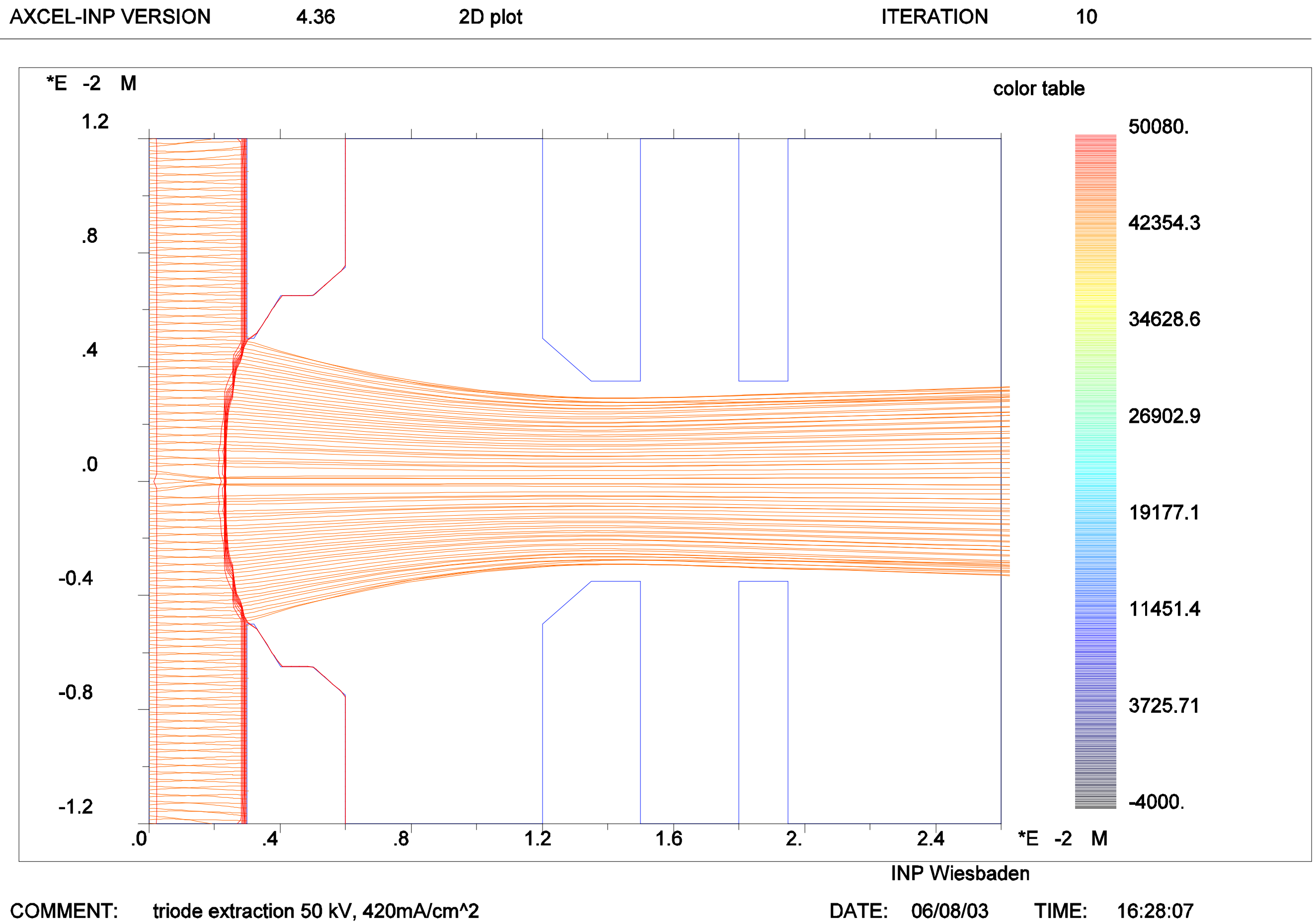
COMMENT: triode extraction 50 kV, 380mA/cm^2

DATE: 06/08/03 TIME: 16:24:13

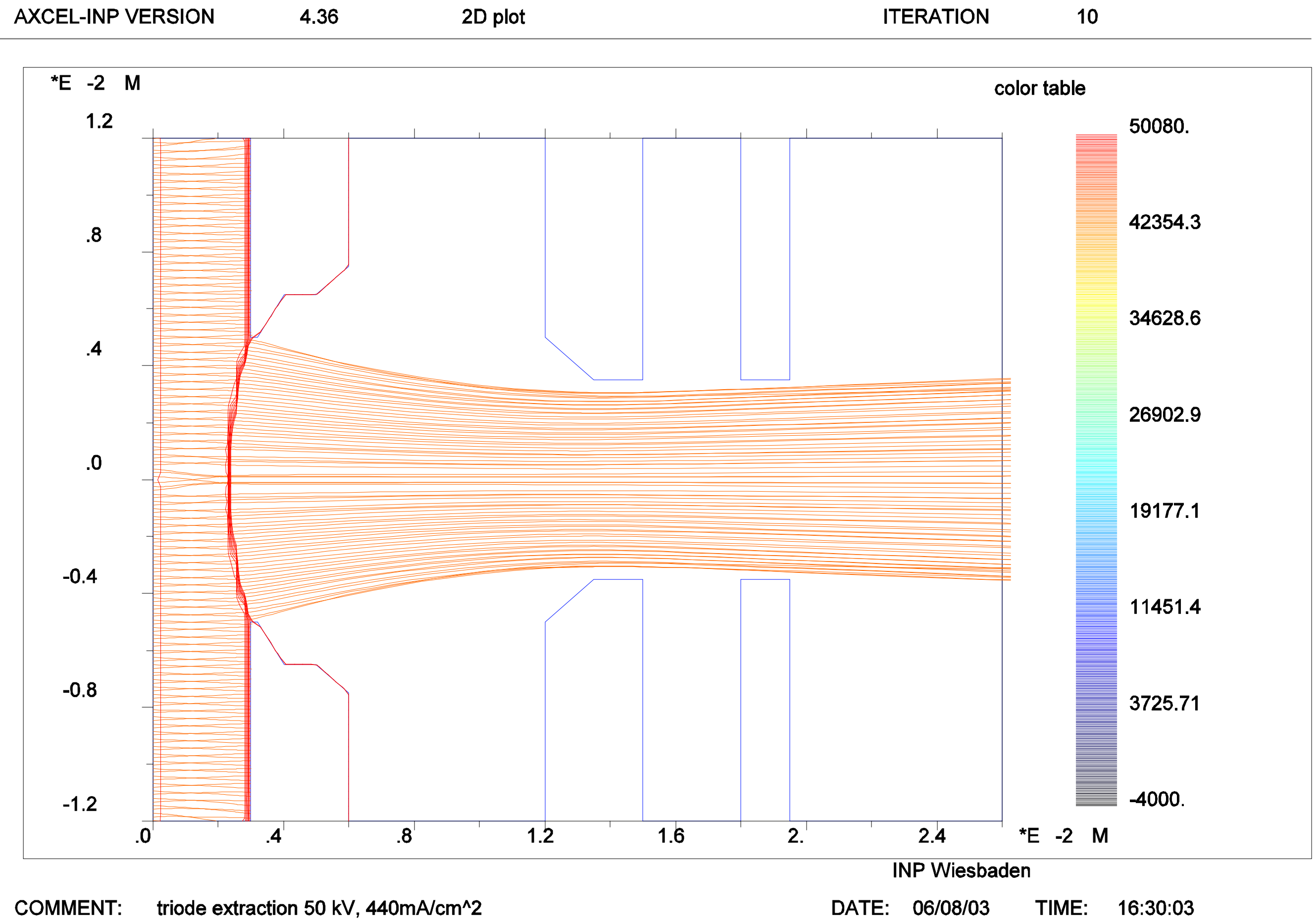
MUCIS


AXCEL-INP VERSION 4.36 2D plot ITERATION 10
*E -2 M
color table
50080.
42354.3
34628.6
26902.9
19177.1
11451.4
3725.71
-4000.
1.2
.8
.4
.0
-0.4
-0.8
-1.2
.0
.4
.8
1.2
1.6
2.
2.4
*E -2 M
INP Wiesbaden
COMMENT: triode extraction 50 kV, 400mA/cm^2
DATE: 06/08/03 TIME: 16:25:57

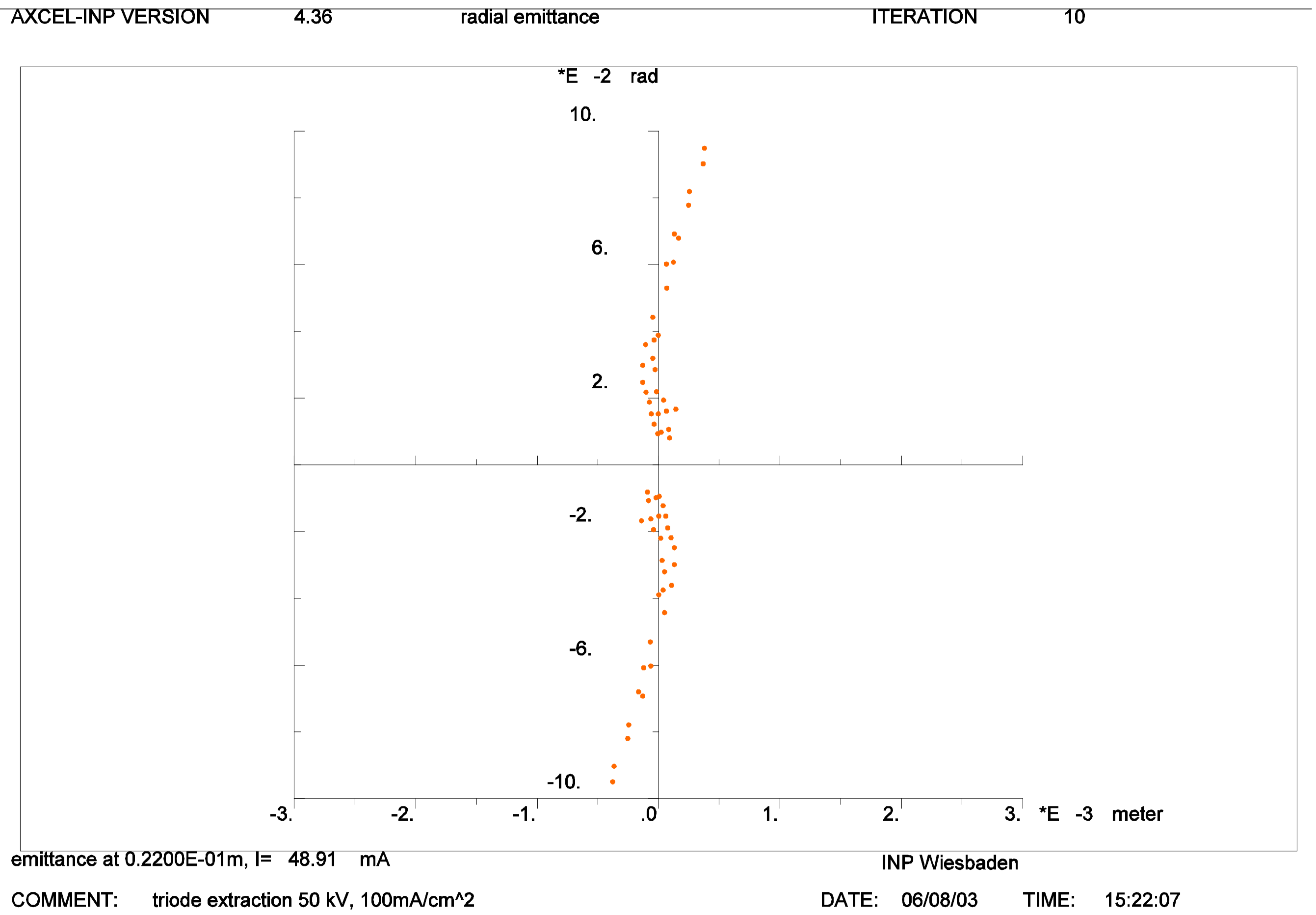
MUCIS


AXCEL-INP VERSION 4.36 2D plot ITERATION 10
*E -2 M
color table
1.2
.8
.4
.0
-0.4
-0.8
-1.2
.0
.4
.8
1.2
1.6
2.
2.4
*E -2 M
50080.
42354.3
34628.6
26902.9
19177.1
11451.4
3725.71
-4000.
INP Wiesbaden
COMMENT: triode extraction 50 kV, 420mA/cm^2
DATE: 06/08/03 TIME: 16:28:07

MUCIS

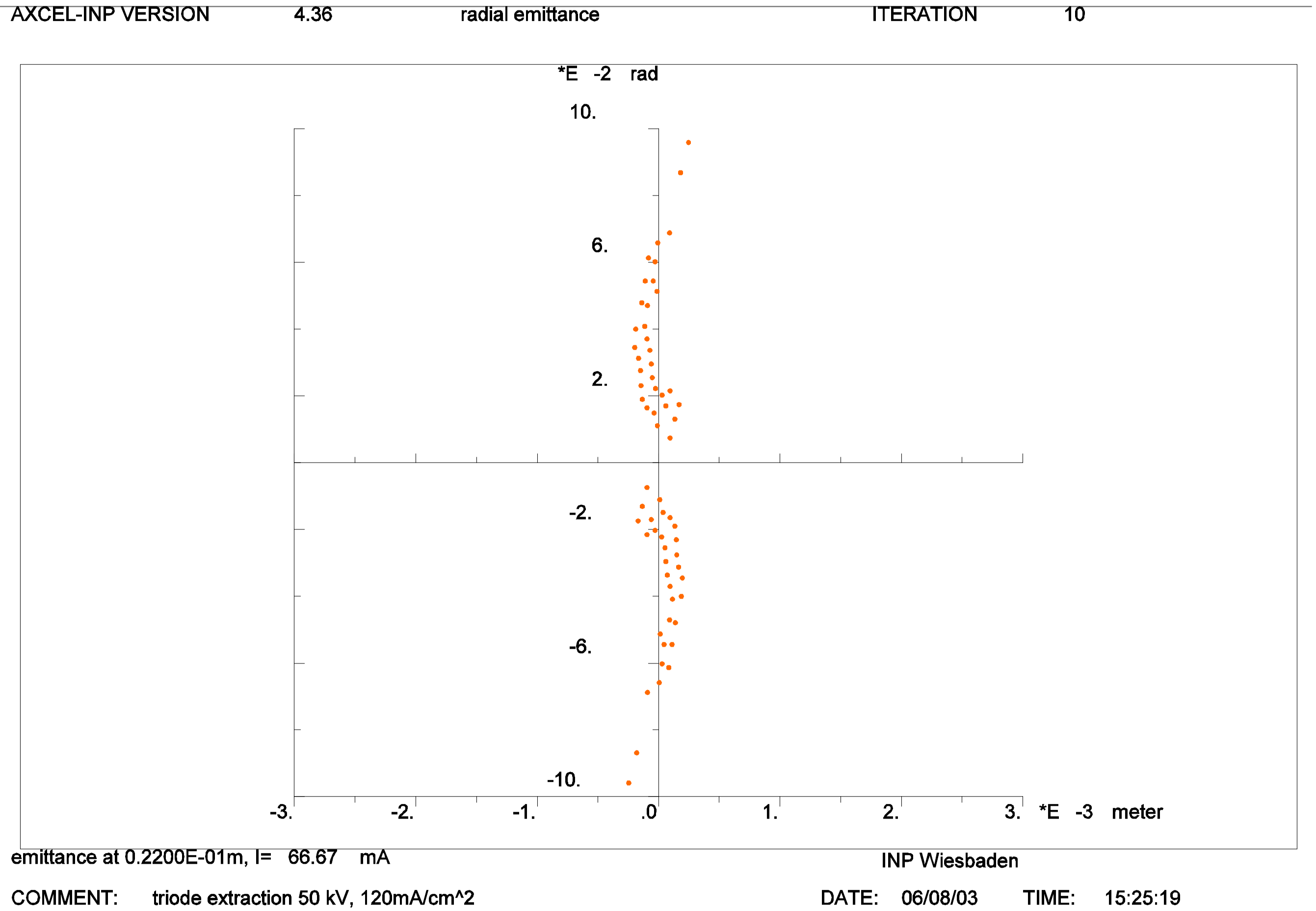

AXCEL-INP VERSION 4.36 2D plot ITERATION 10
*E -2 M
color table
50080.
42354.3
34628.6
26902.9
19177.1
11451.4
3725.71
-4000.
1.2
.8
.4
.0
-0.4
-0.8
-1.2
.0
.4
.8
1.2
1.6
2.
2.4
*E -2 M
INP Wiesbaden
COMMENT: triode extraction 50 kV, 440mA/cm^2
DATE: 06/08/03 TIME: 16:30:03

MUCIS

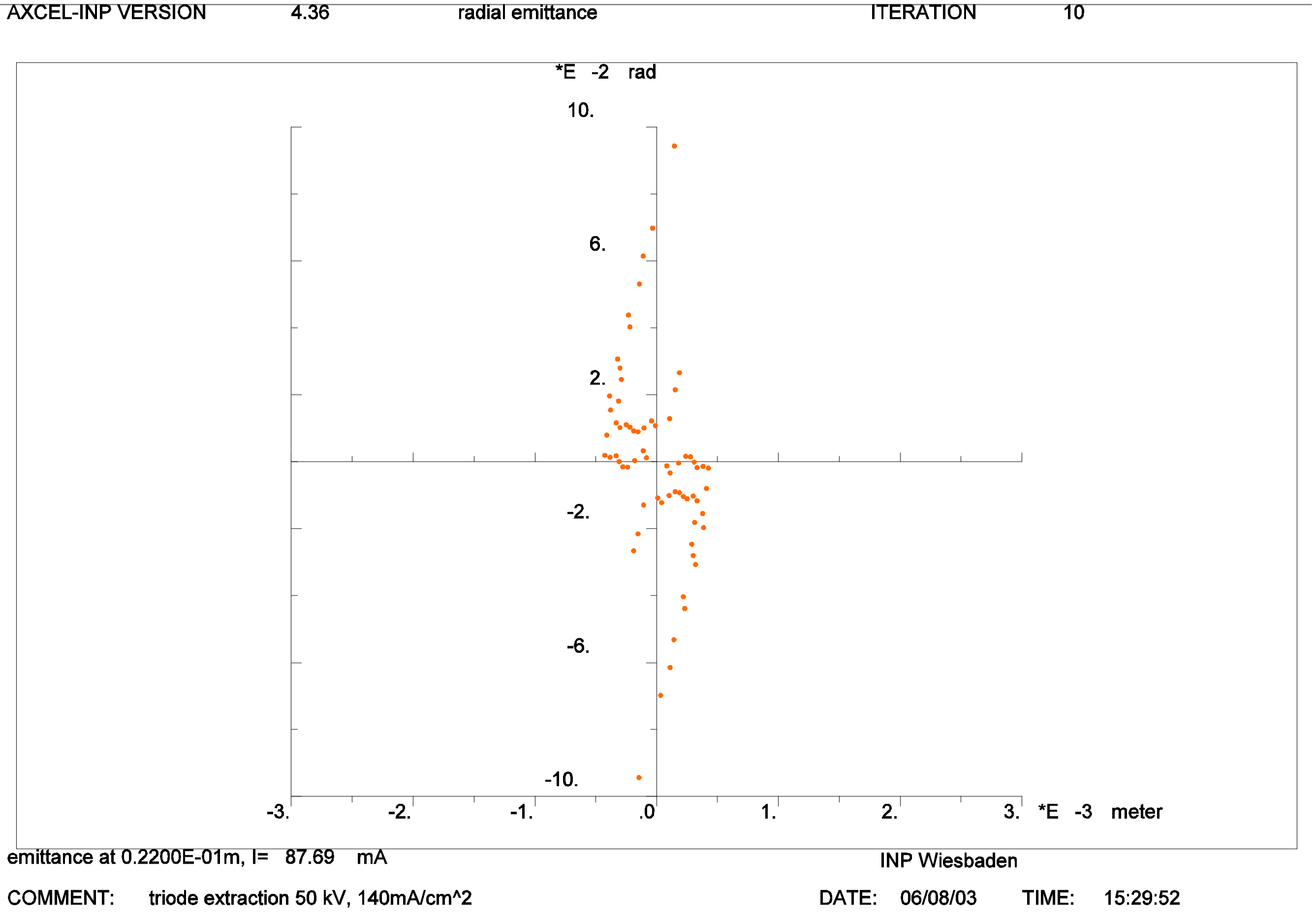


AXCEL-INP VERSION 4.36 radial emittance ITERATION 10
*E -2 rad
10.
6.
2.
-2.
-6.
-10.
-3.
-2.
-1.
.0
1.
2.
3.
*E -3 meter
emittance at 0.2200E-01m, I= 48.91 mA
INP Wiesbaden
COMMENT: triode extraction 50 kV, 100mA/cm^2
DATE: 06/08/03 TIME: 15:22:07

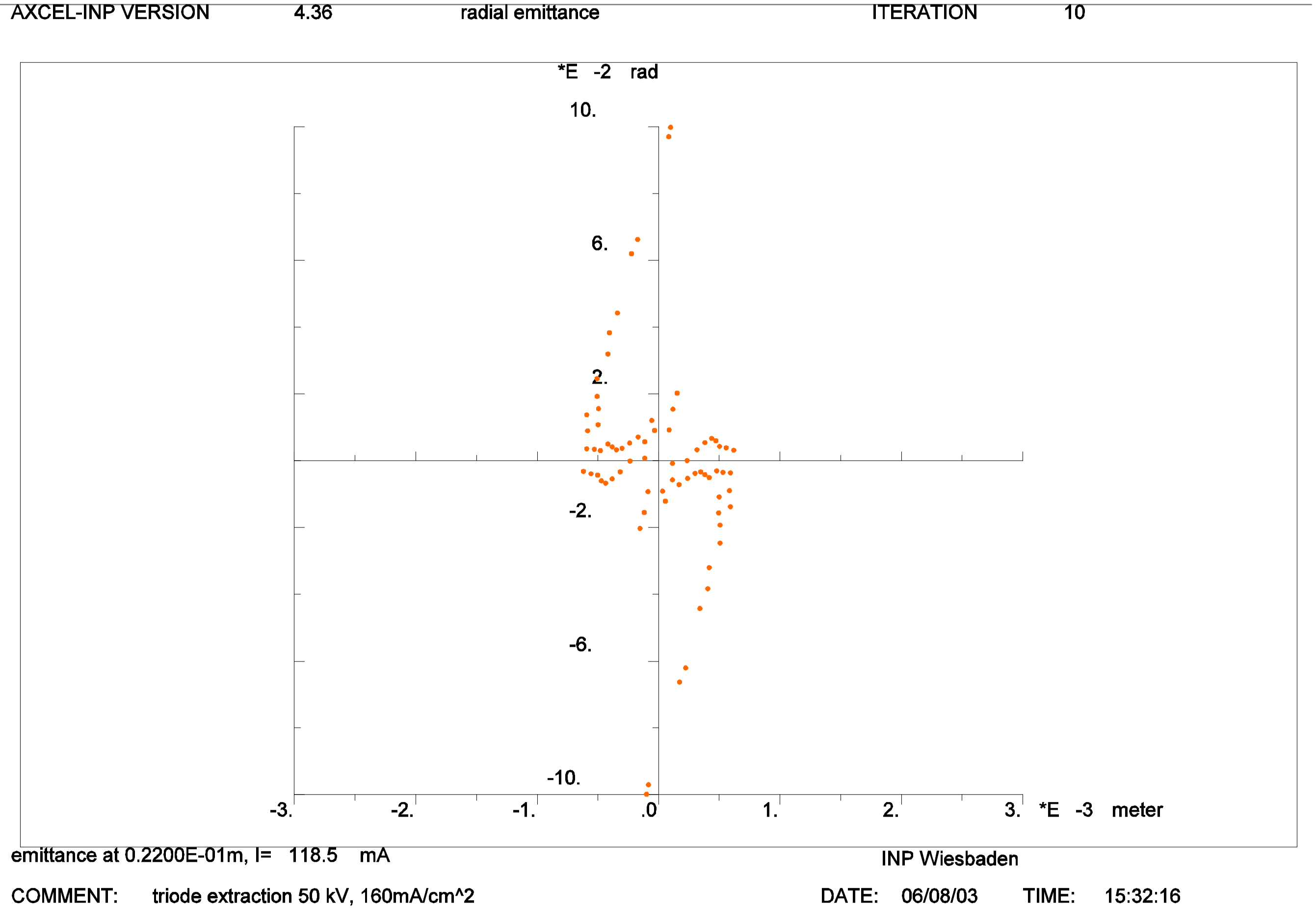
MUCIS


AXCEL-INP VERSION 4.36 radial emittance ITERATION 10
*E -2 rad
10.
6.
2.
-2.
-6.
-10.
-3.
-2.
-1.
.0
1.
2.
3.
*E -3 meter
emittance at 0.2200E-01m, I= 66.67 mA
INP Wiesbaden
COMMENT: triode extraction 50 kV, 120mA/cm^2
DATE: 06/08/03 TIME: 15:25:19

MUCIS

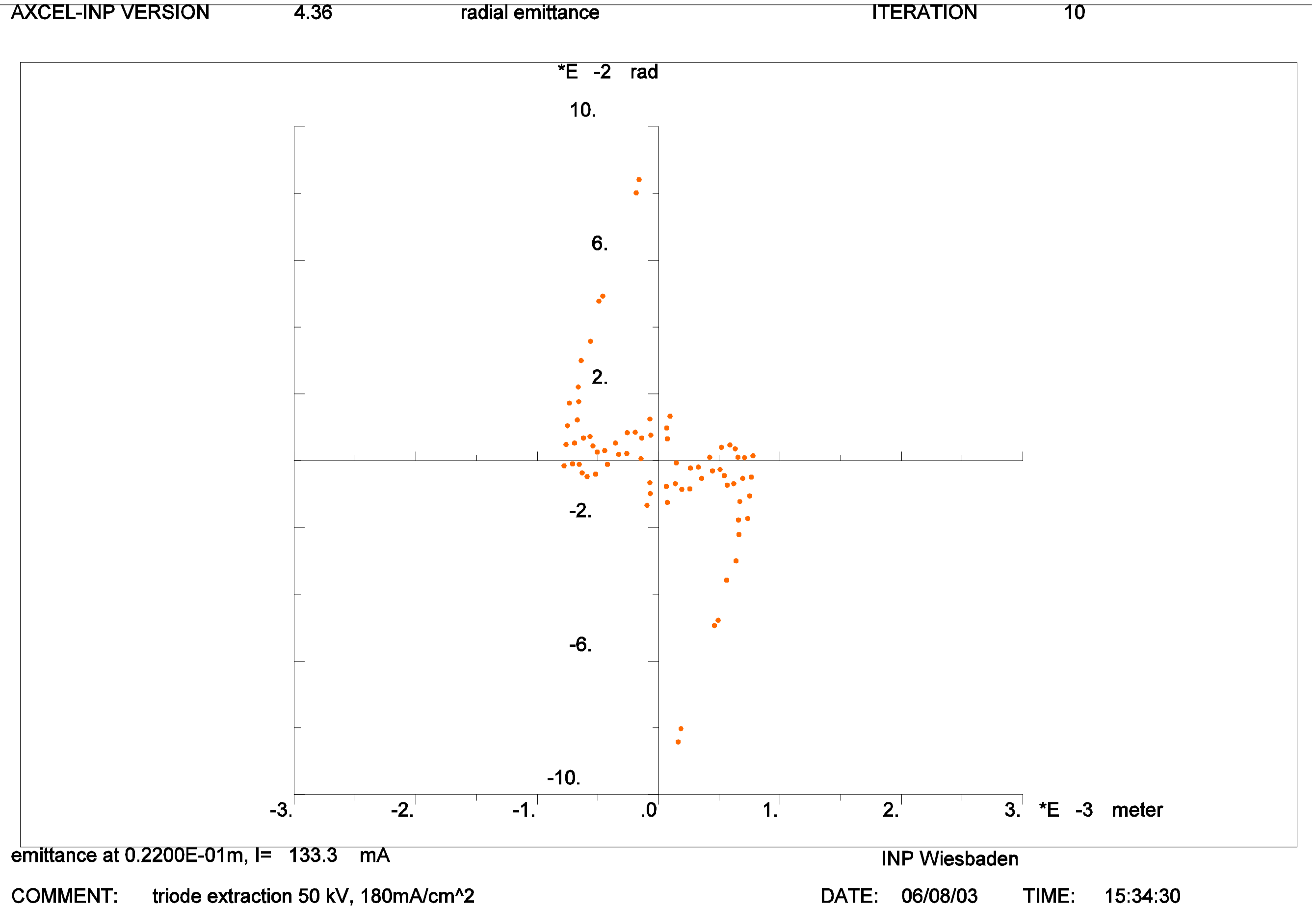

AXCEL-INP VERSION 4.36 radial emittance ITERATION 10
*E -2 rad
10.
6.
2.
-2.
-6.
-10.
-3.
-2.
-1.
.0
1.
2.
3.
*E -3 meter
emittance at 0.2200E-01m, I= 87.69 mA
INP Wiesbaden
COMMENT: triode extraction 50 kV, 140mA/cm^2
DATE: 06/08/03 TIME: 15:29:52

MUCIS



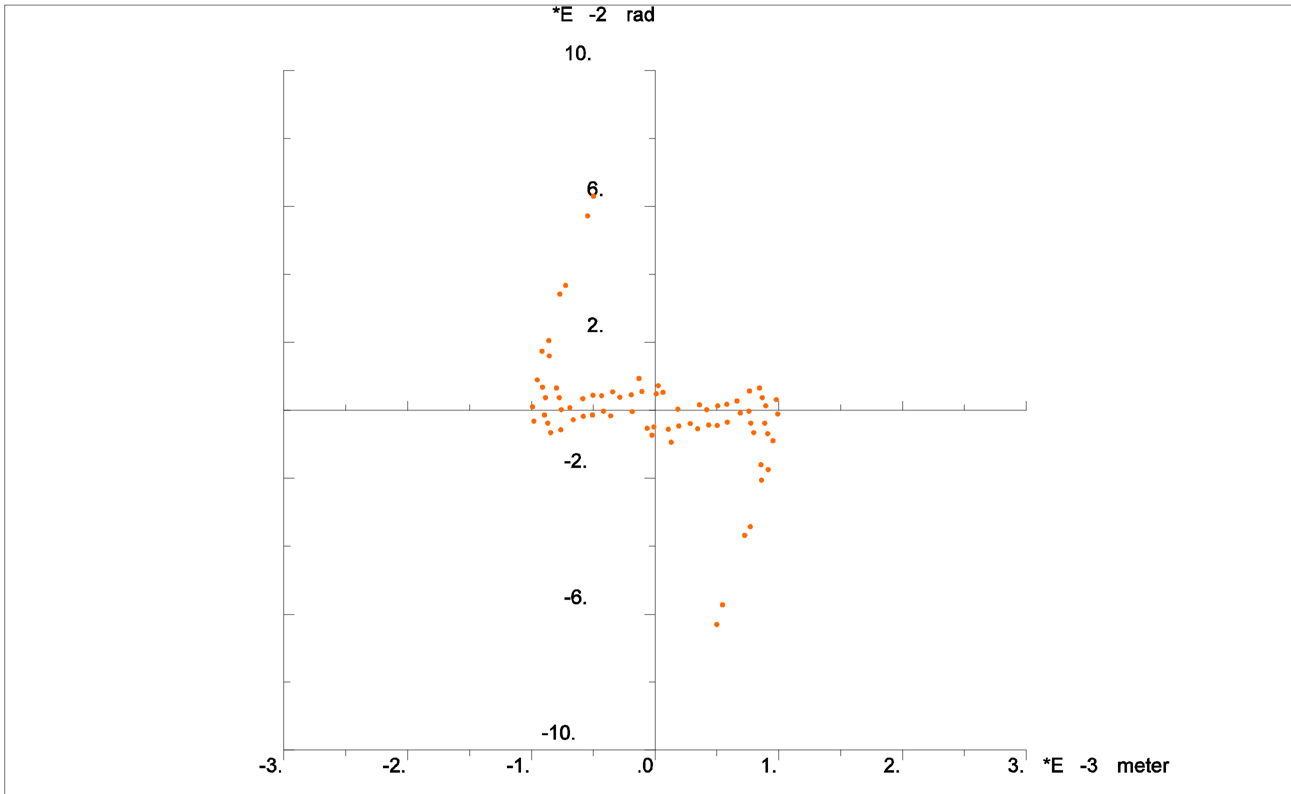
AXCEL-INP VERSION 4.36 radial emittance ITERATION 10
*E -2 rad
10.
6.
2.
-2.
-6.
-10.
-3.
-2.
-1.
.0
1.
2.
3.
*E -3 meter
emittance at 0.2200E-01m, I= 118.5 mA
INP Wiesbaden
COMMENT: triode extraction 50 kV, 160mA/cm^2
DATE: 06/08/03 TIME: 15:32:16

MUCIS


AXCEL-INP VERSION 4.36 radial emittance ITERATION 10
*E -2 rad
10.
6.
2.
-2.
-6.
-10.
-3.
-2.
-1.
.0
1.
2.
3.
*E -3 meter
emittance at 0.2200E-01m, I= 133.3 mA
INP Wiesbaden
COMMENT: triode extraction 50 kV, 180mA/cm^2
DATE: 06/08/03 TIME: 15:34:30

MUCIS

AXCEL-INP VERSION 4.36 radial emittance ITERATION 10



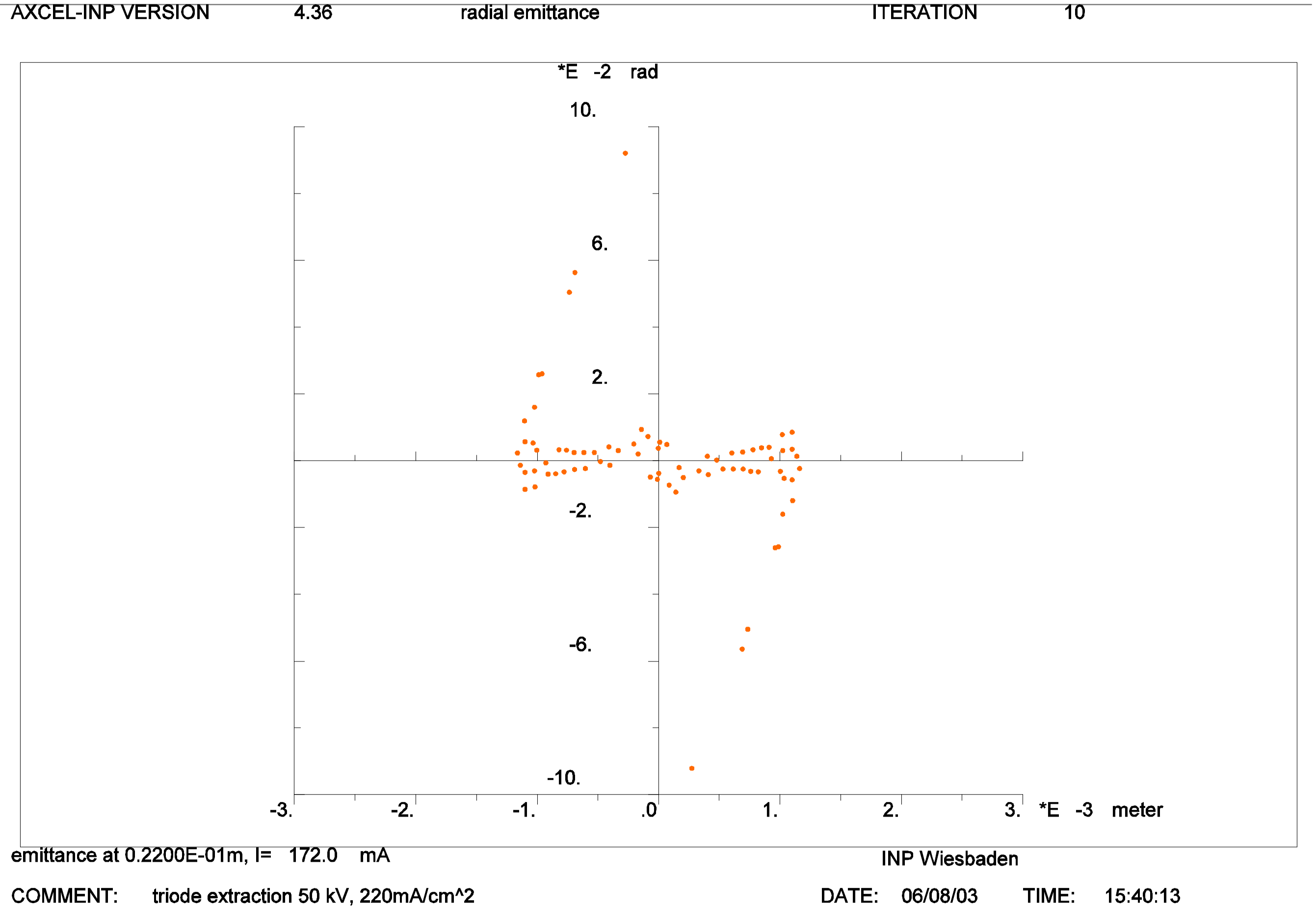
emittance at 0.2200E-01m, I= 148.1 mA

INP Wiesbaden

COMMENT: triode extraction 50 kV, 200mA/cm^2

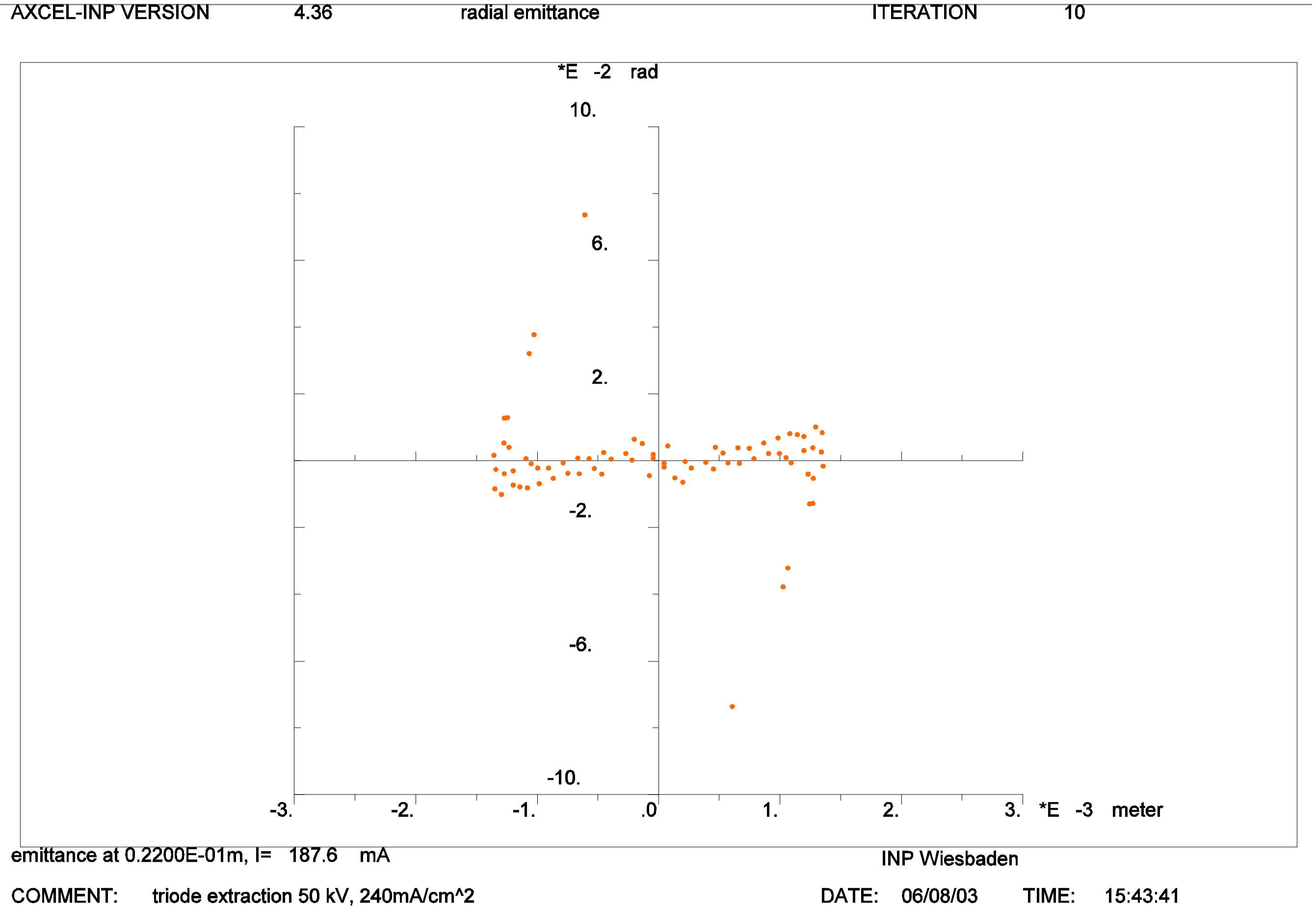
DATE: 06/08/03 TIME: 15:37:52

MUCIS

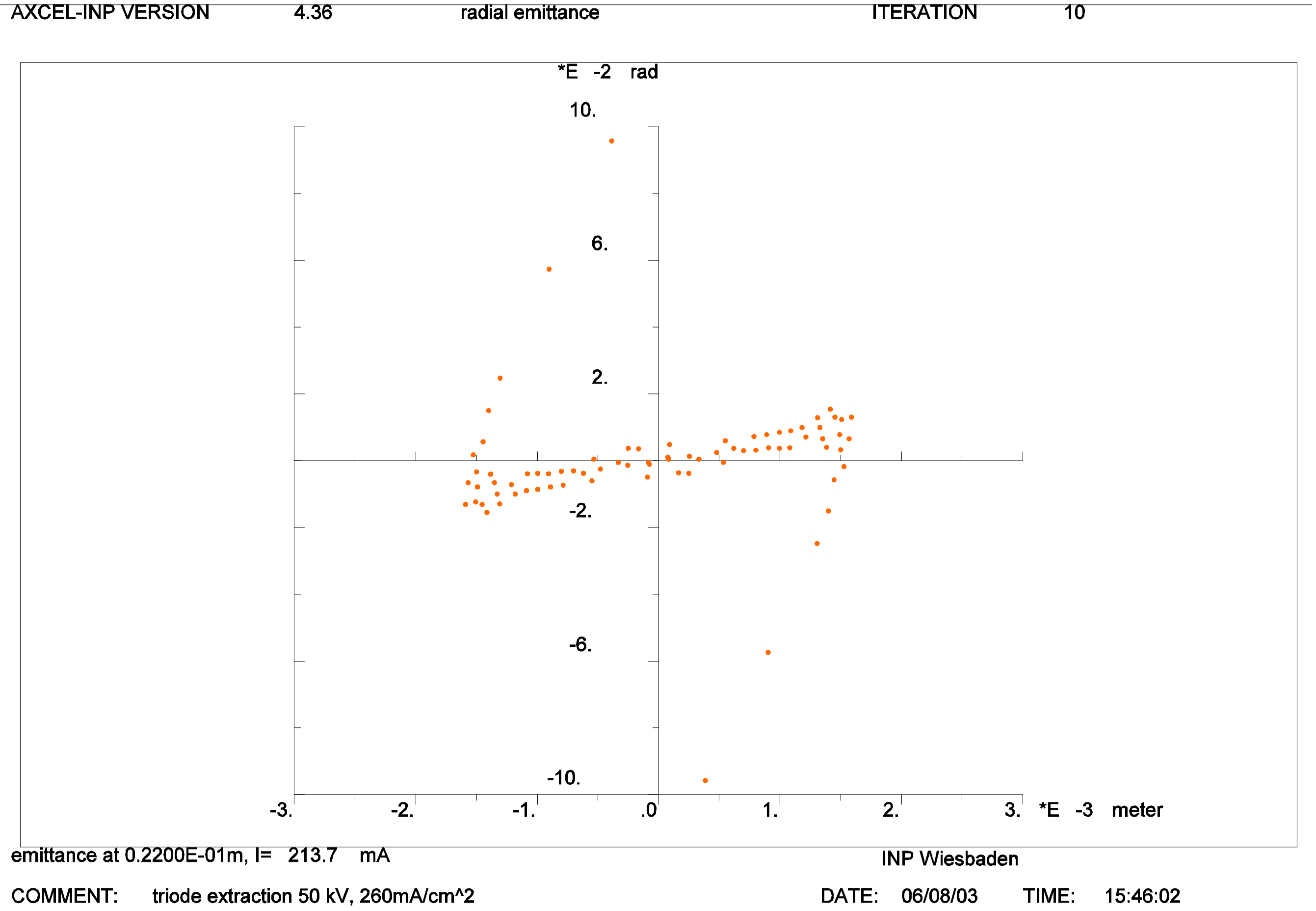


AXCEL-INP VERSION 4.36 radial emittance ITERATION 10
*E -2 rad
10.
6.
2.
-2.
-6.
-10.
-3.
-2.
-1.
.0
1.
2.
3.
*E -3 meter
emittance at 0.2200E-01m, I= 172.0 mA
INP Wiesbaden
COMMENT: triode extraction 50 kV, 220mA/cm^2
DATE: 06/08/03 TIME: 15:40:13

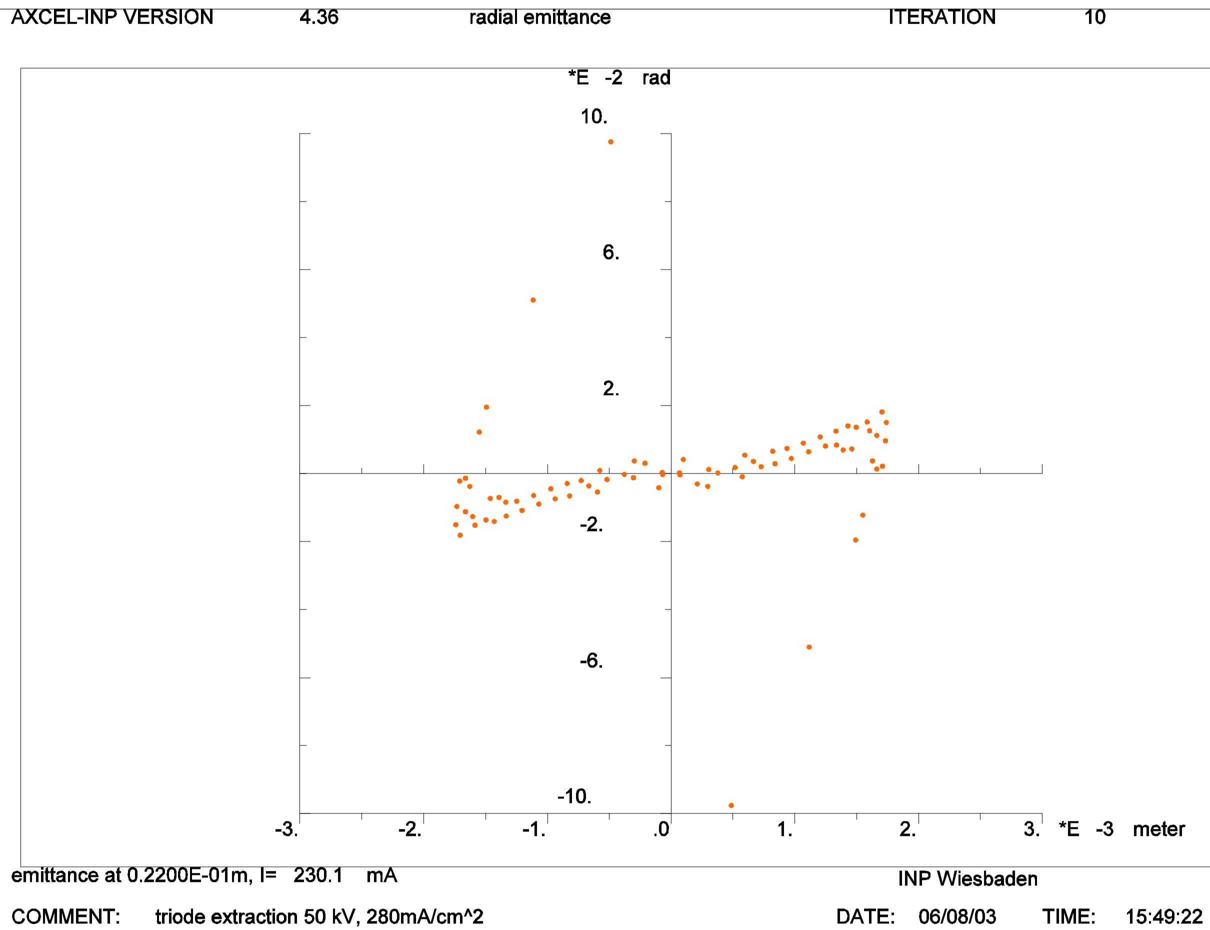
MUCIS


AXCEL-INP VERSION 4.36 radial emittance ITERATION 10
*E -2 rad
10.
6.
2.
-2.
-6.
-10.
-3.
-2.
-1.
.0
1.
2.
3.
*E -3 meter
emittance at 0.2200E-01m, I= 187.6 mA
INP Wiesbaden
COMMENT: triode extraction 50 kV, 240mA/cm^2
DATE: 06/08/03 TIME: 15:43:41

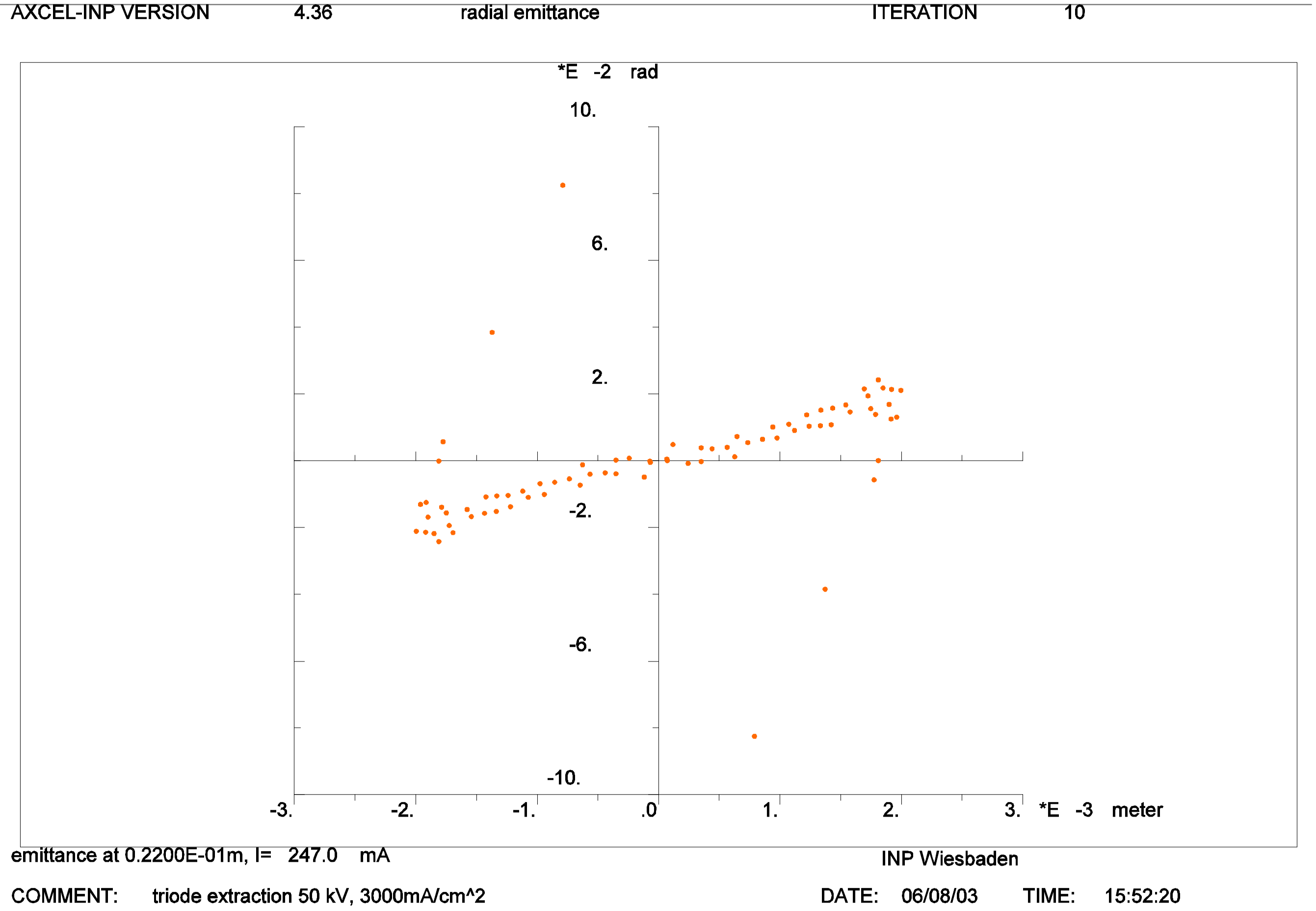
MUCIS


AXCEL-INP VERSION 4.36 radial emittance ITERATION 10
*E -2 rad
10.
6.
2.
-2.
-6.
-10.
-3.
-2.
-1.
.0
1.
2.
3.
*E -3 meter
emittance at 0.2200E-01m, I= 213.7 mA
INP Wiesbaden
COMMENT: triode extraction 50 kV, 260mA/cm^2
DATE: 06/08/03 TIME: 15:46:02

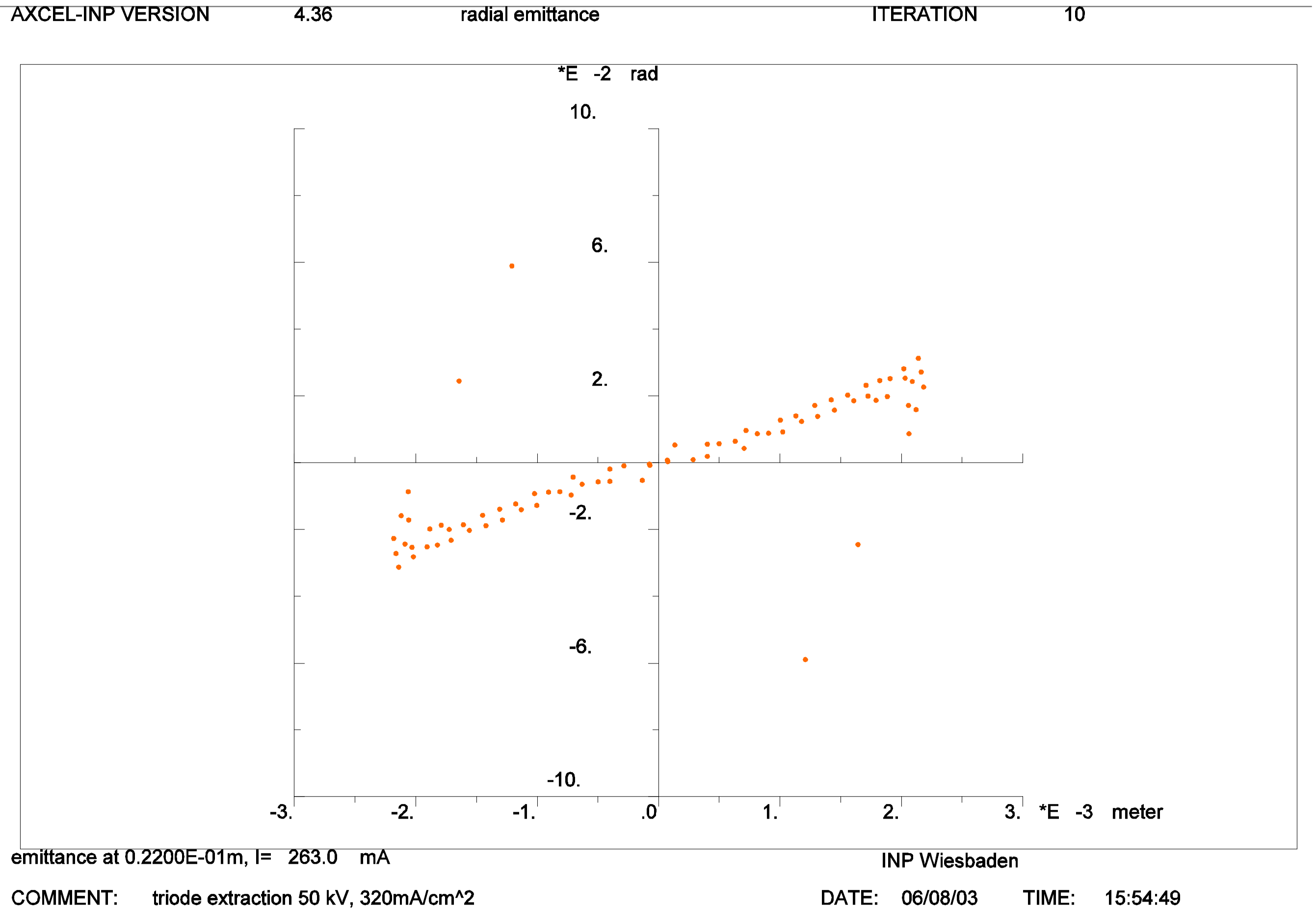
MUCIS


AXCEL-INP VERSION 4.36 radial emittance ITERATION 10
*E -2 rad
10.
6.
2.
-2.
-6.
-10.
-3.
-2.
-1.
.0
1.
2.
3.
*E -3 meter
emittance at 0.2200E-01m, I= 230.1 mA
INP Wiesbaden
COMMENT: triode extraction 50 kV, 280mA/cm^2
DATE: 06/08/03 TIME: 15:49:22

MUCIS

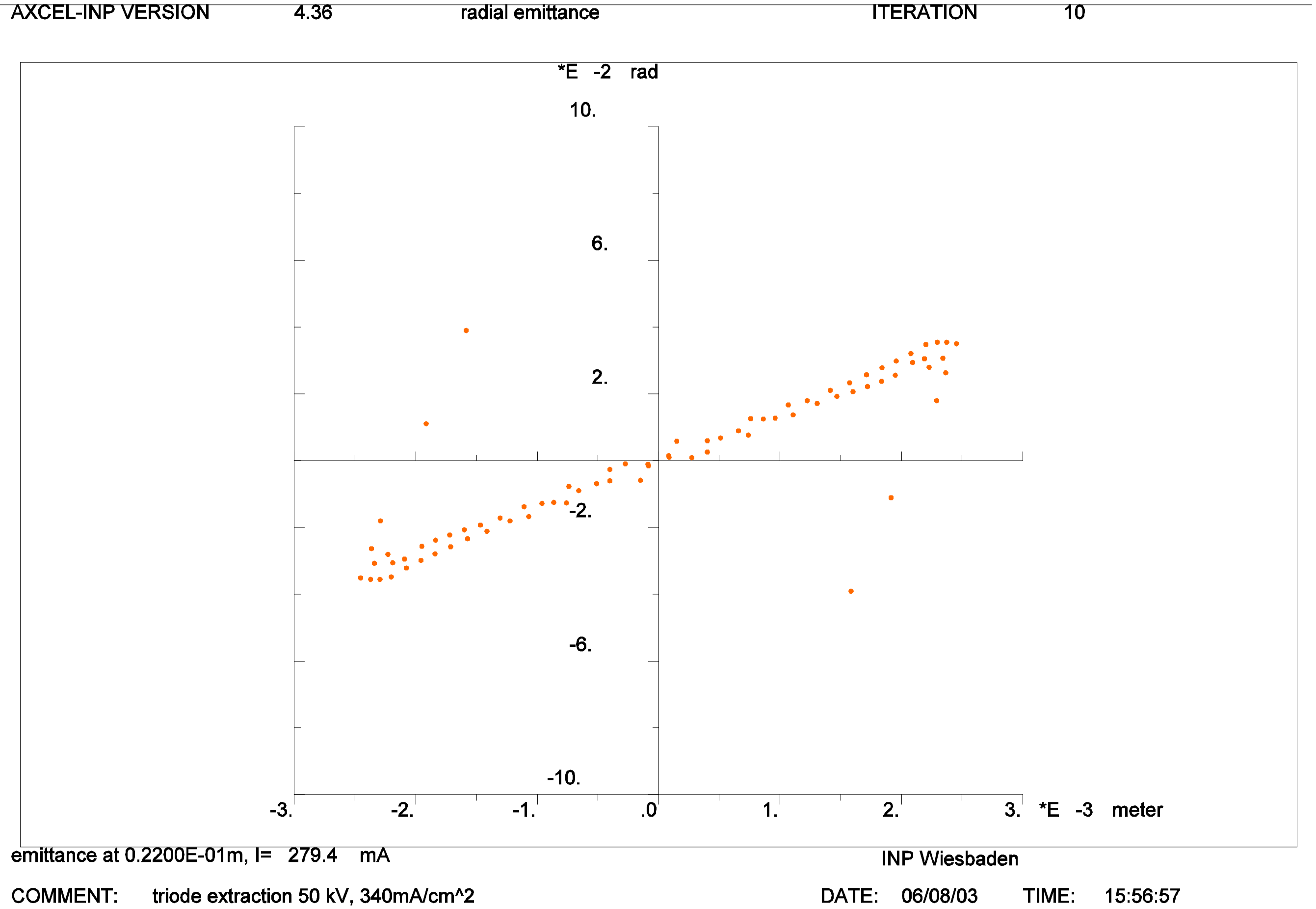

AXCEL-INP VERSION 4.36 radial emittance ITERATION 10
*E -2 rad
10.
6.
2.
-2.
-6.
-10.
-3. -2. -1. .0 1. 2. 3. *E -3 meter
emittance at 0.2200E-01m, I= 247.0 mA
INP Wiesbaden
COMMENT: triode extraction 50 kV, 3000mA/cm^2
DATE: 06/08/03 TIME: 15:52:20

MUCIS



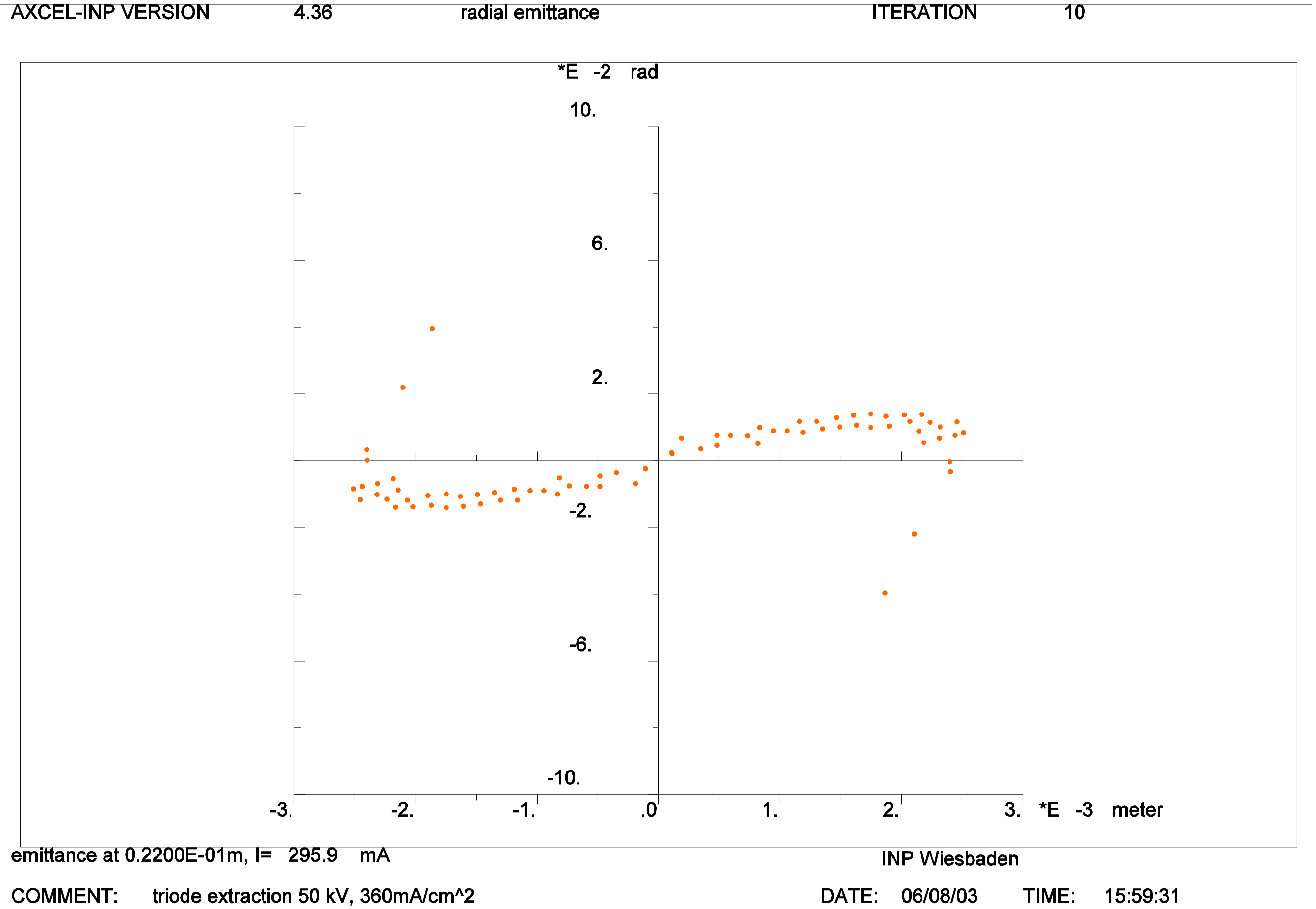
AXCEL-INP VERSION 4.36 radial emittance ITERATION 10
*E -2 rad
10.
6.
2.
-2.
-6.
-10.
-3.
-2.
-1.
.0
1.
2.
3.
*E -3 meter
emittance at 0.2200E-01m, I= 263.0 mA
INP Wiesbaden
COMMENT: triode extraction 50 kV, 320mA/cm^2
DATE: 06/08/03 TIME: 15:54:49

MUCIS



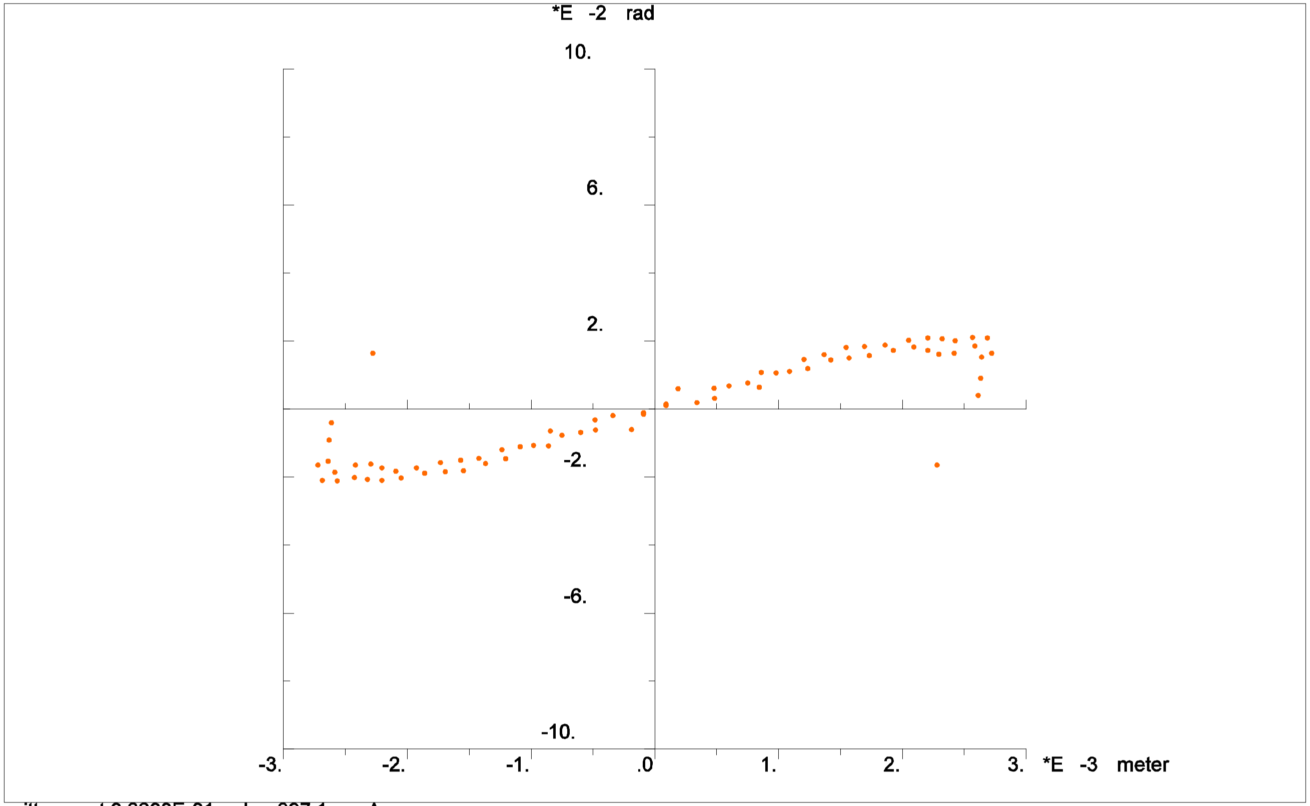
AXCEL-INP VERSION 4.36 radial emittance ITERATION 10
*E -2 rad
10.
6.
2.
-2.
-6.
-10.
-3.
-2.
-1.
.0
1.
2.
3.
*E -3 meter
emittance at 0.2200E-01m, I= 279.4 mA
INP Wiesbaden
COMMENT: triode extraction 50 kV, 340mA/cm^2
DATE: 06/08/03 TIME: 15:56:57

MUCIS


AXCEL-INP VERSION 4.36 radial emittance ITERATION 10
*E -2 rad
10.
6.
2.
-2.
-6.
-10.
-3.
-2.
-1.
.0
1.
2.
3.
*E -3 meter
emittance at 0.2200E-01m, I= 295.9 mA
INP Wiesbaden
COMMENT: triode extraction 50 kV, 360mA/cm^2
DATE: 06/08/03 TIME: 15:59:31

MUCIS

AXCEL-INP VERSION 4.36 radial emittance ITERATION 10



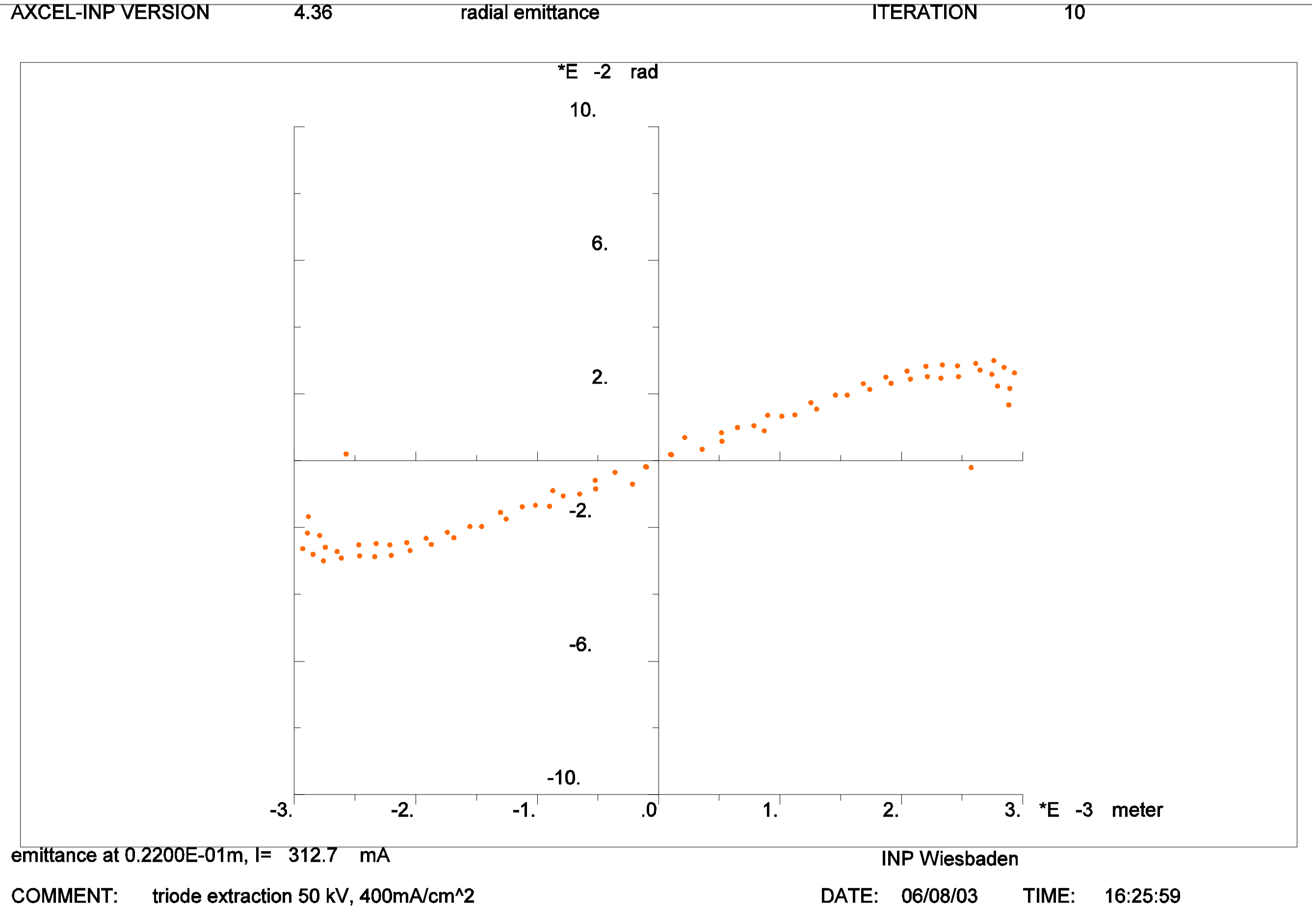
emittance at 0.2200E-01m, I= 297.1 mA

INP Wiesbaden

COMMENT: triode extraction 50 kV, 380mA/cm^2

DATE: 06/08/03 TIME: 16:24:15

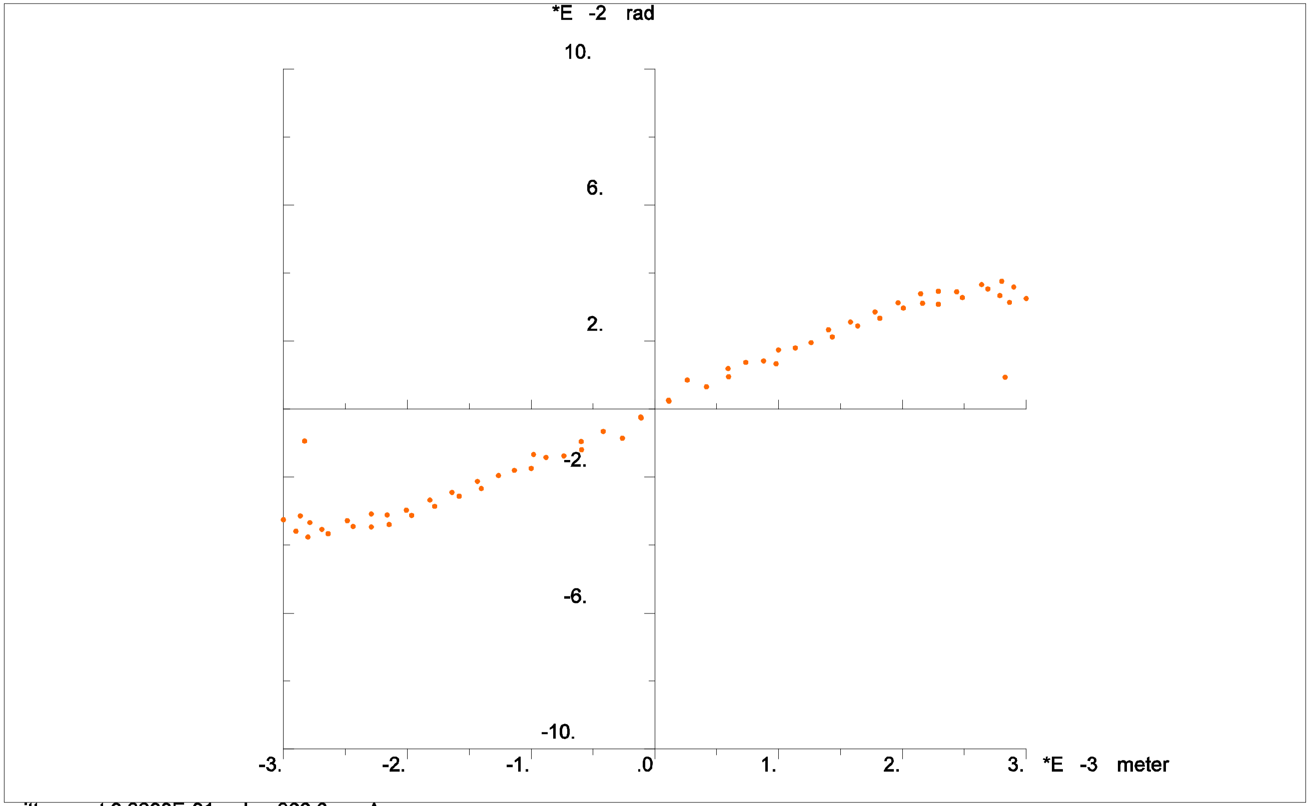
MUCIS



AXCEL-INP VERSION 4.36 radial emittance ITERATION 10
*E -2 rad
10.
6.
2.
-2.
-6.
-10.
-3.
-2.
-1.
.0
1.
2.
3.
*E -3 meter
emittance at 0.2200E-01m, I= 312.7 mA
INP Wiesbaden
COMMENT: triode extraction 50 kV, 400mA/cm^2
DATE: 06/08/03 TIME: 16:25:59

MUCIS

AXCEL-INP VERSION 4.36 radial emittance ITERATION 10



emittance at 0.2200E-01m, I= 266.6 mA

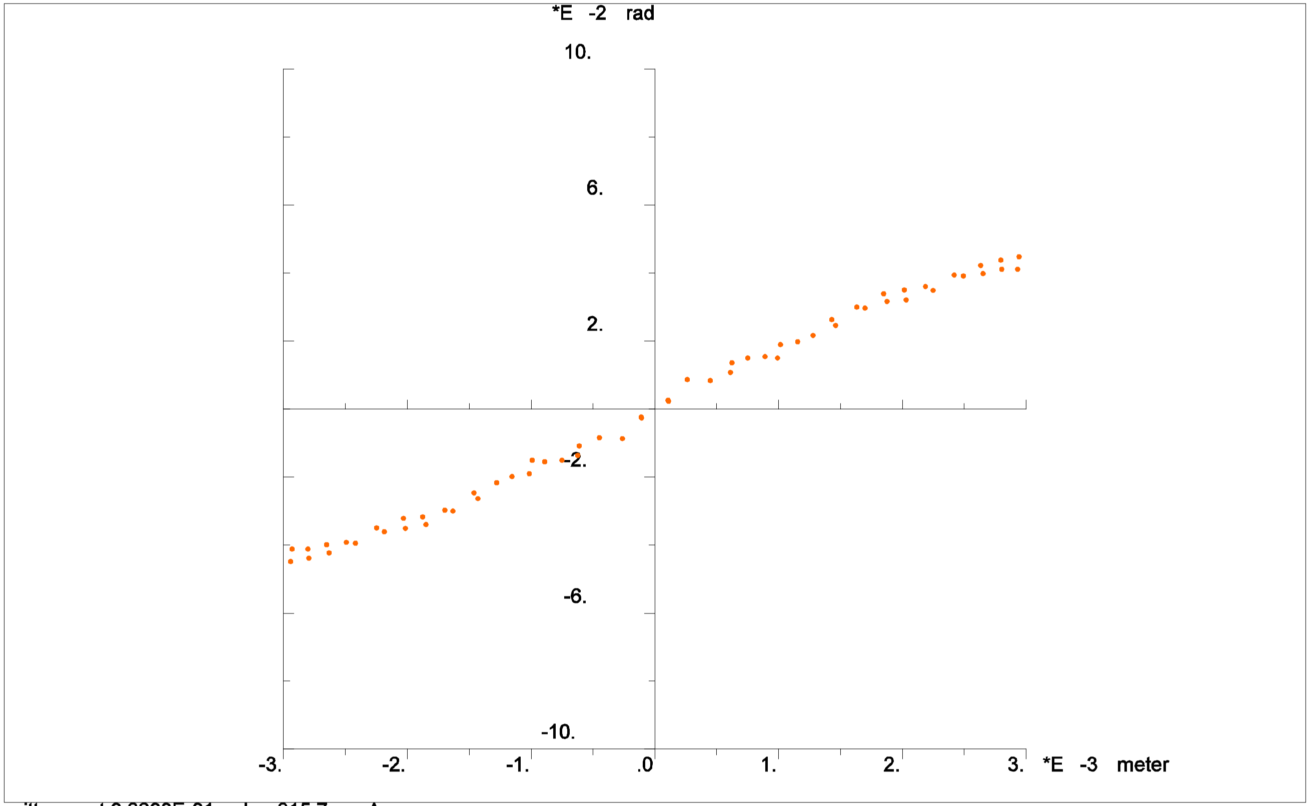
INP Wiesbaden

COMMENT: triode extraction 50 kV, 420mA/cm^2

DATE: 06/08/03 TIME: 16:28:10

MUCIS

AXCEL-INP VERSION 4.36 radial emittance ITERATION 10



emittance at 0.2200E-01m, I= 215.7 mA

INP Wiesbaden

COMMENT: triode extraction 50 kV, 440mA/cm^2

DATE: 06/08/03 TIME: 16:30:05

MEVVA

MEVVA Quelle

Startenergie der U Ionen 100 eV

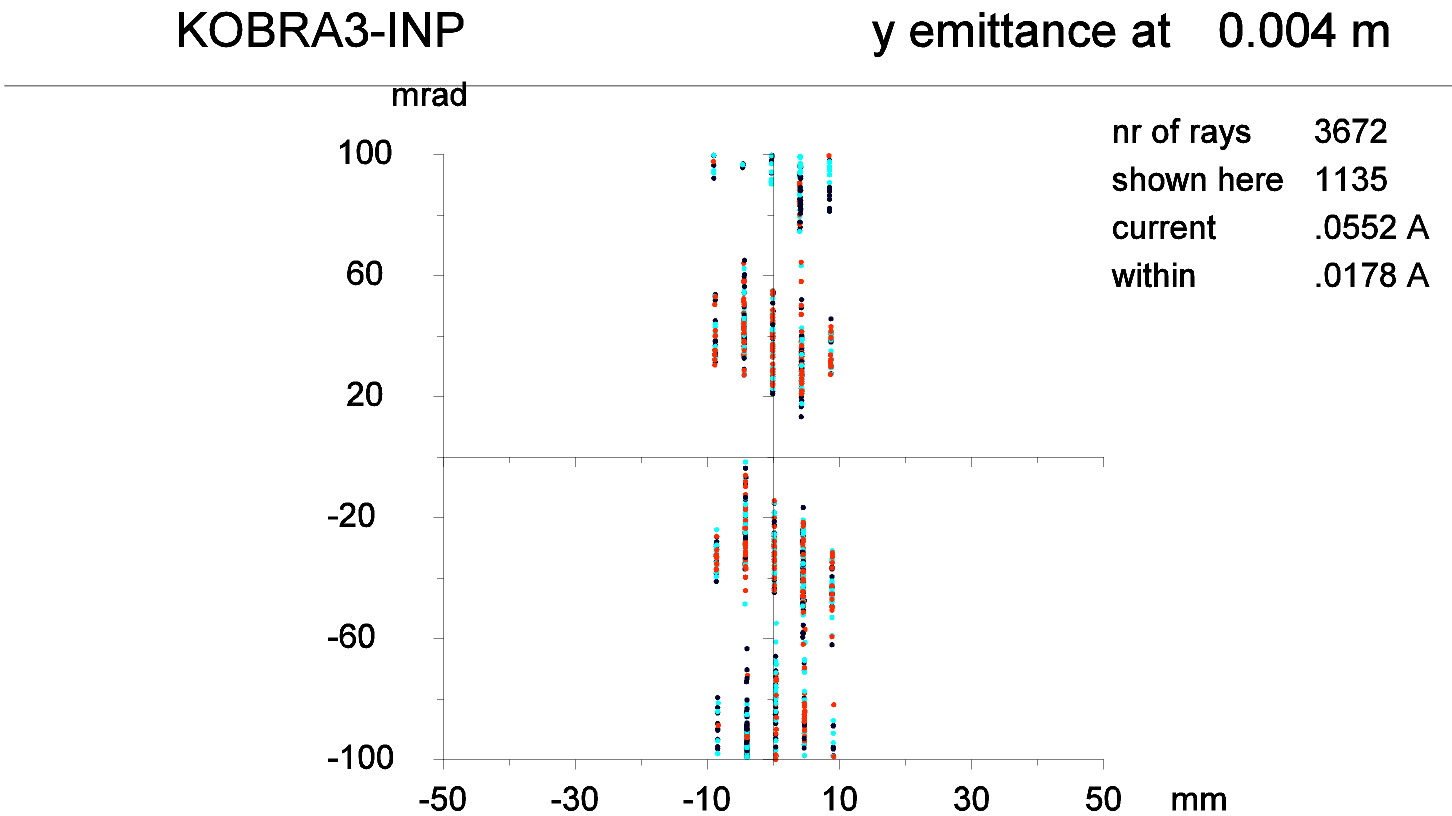
Ladungsverteilung 2+, 3+ und 4+

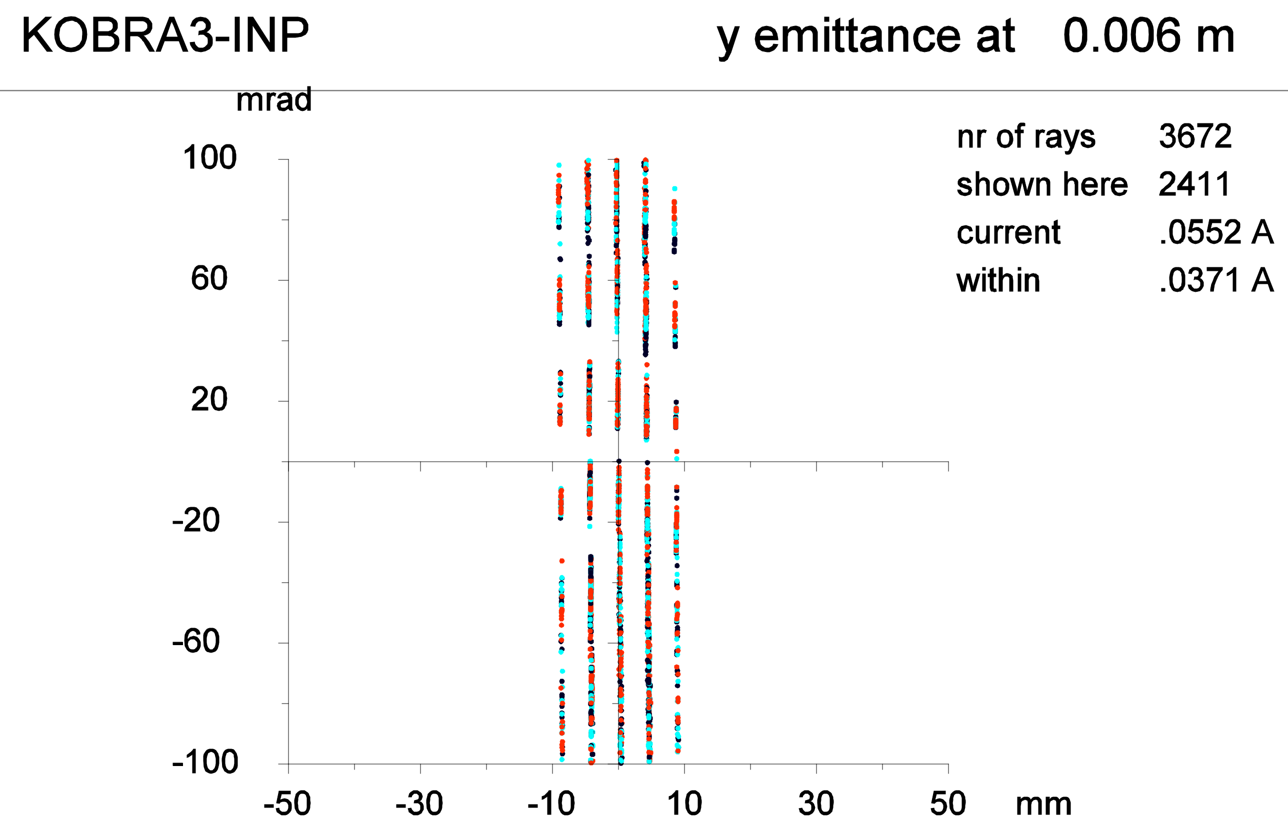
Extraktionsspannung 30 kV

Beschleunigungsspannung 100 kV

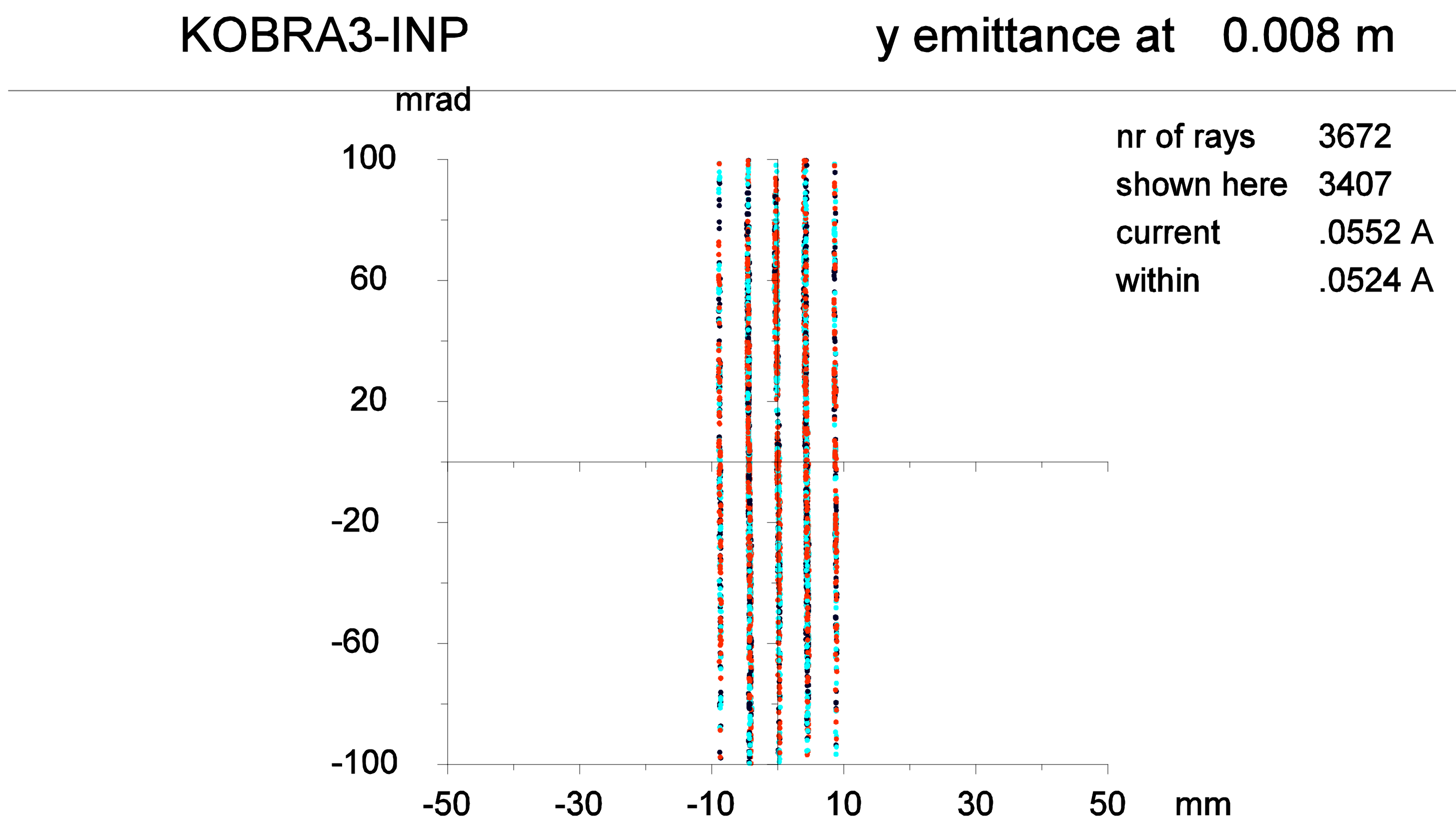
raumladungskompensierter Strahltransport!

In der Extraktion

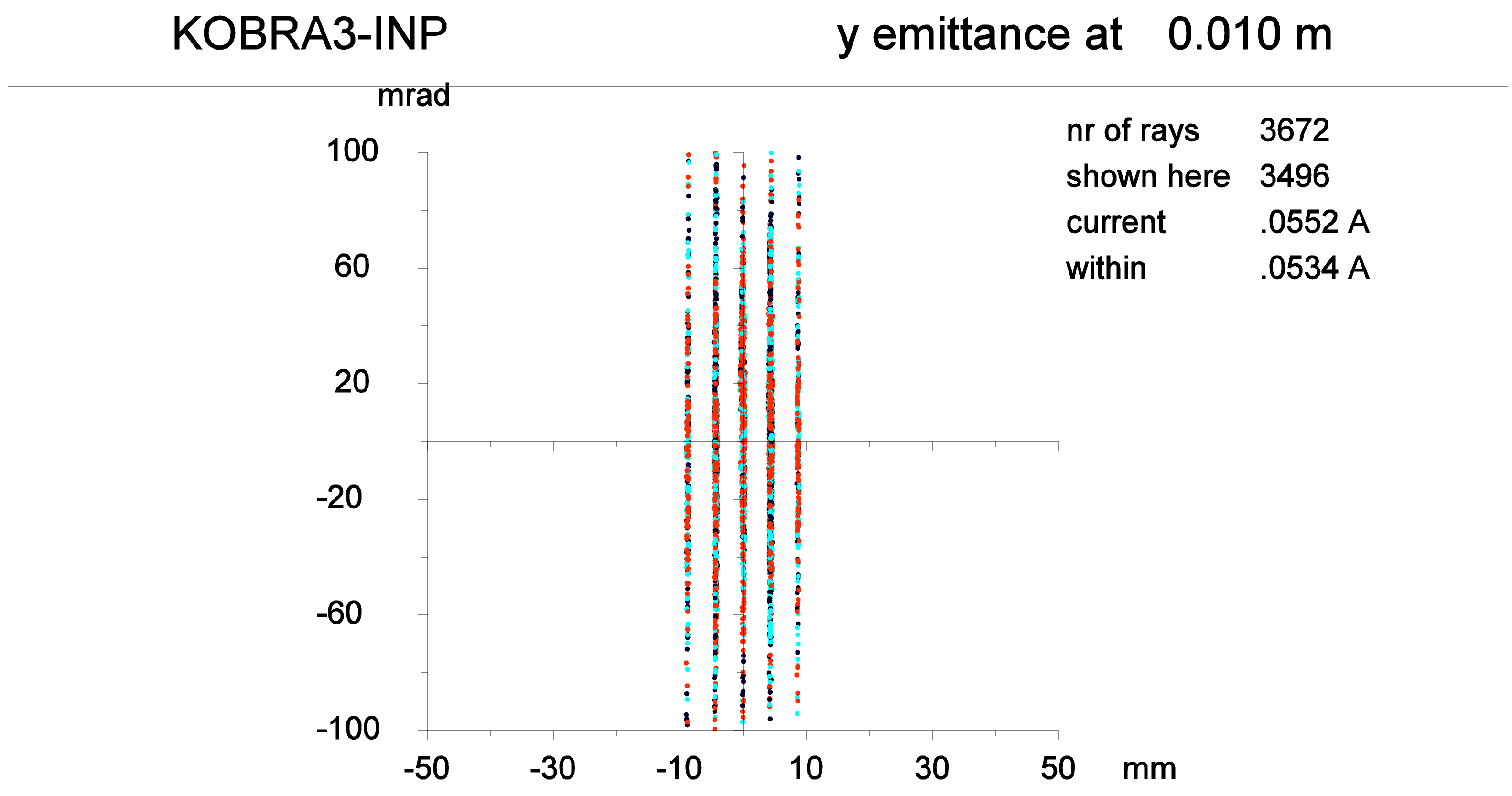


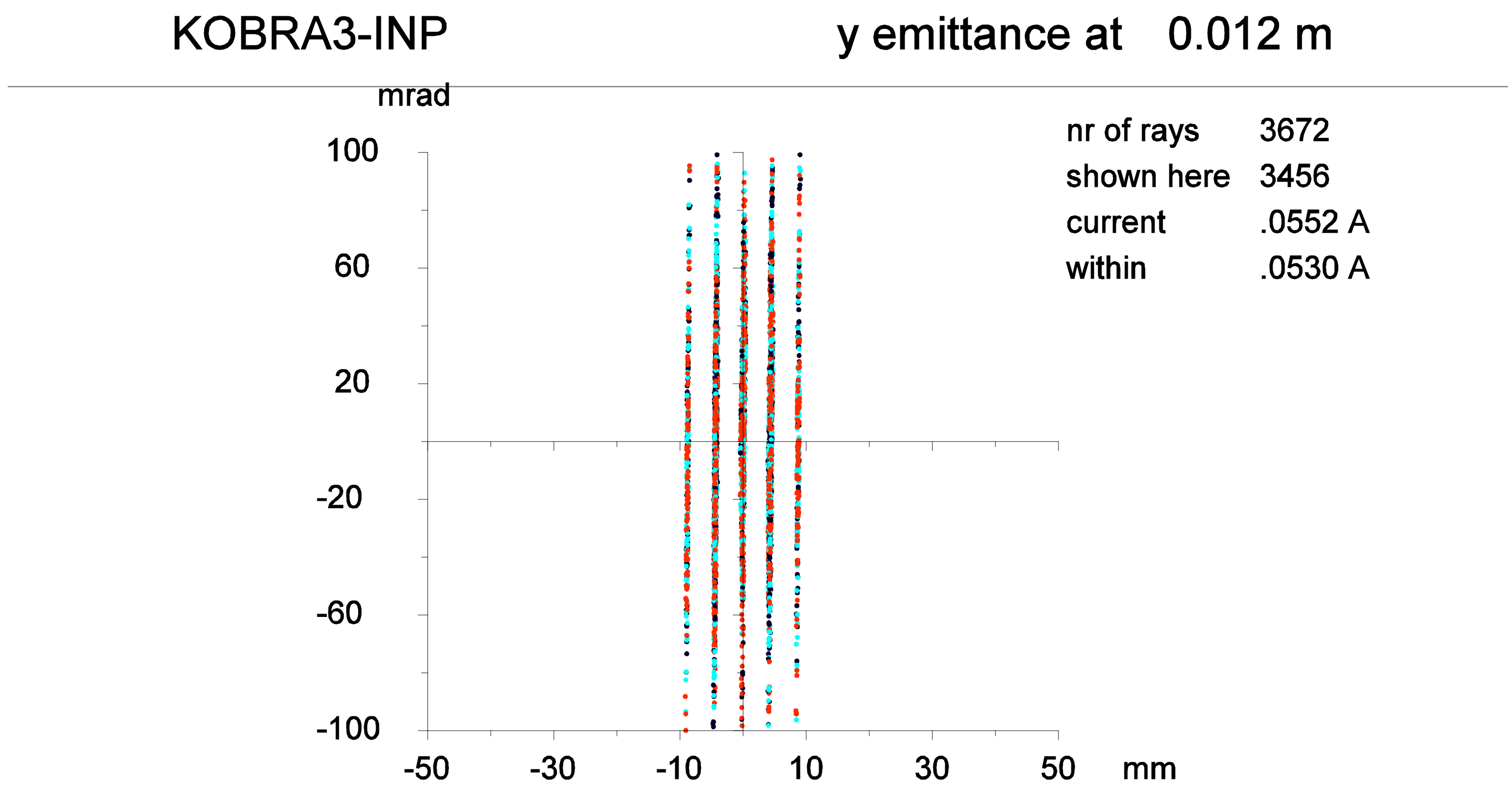


KOBRA3-INP
y emittance at 0.006 m
mrad
100
60
20
-20
-60
-100
-50
-30
-10
10
30
50
mm
nr of rays 3672
shown here 2411
current .0552 A
within .0371 A

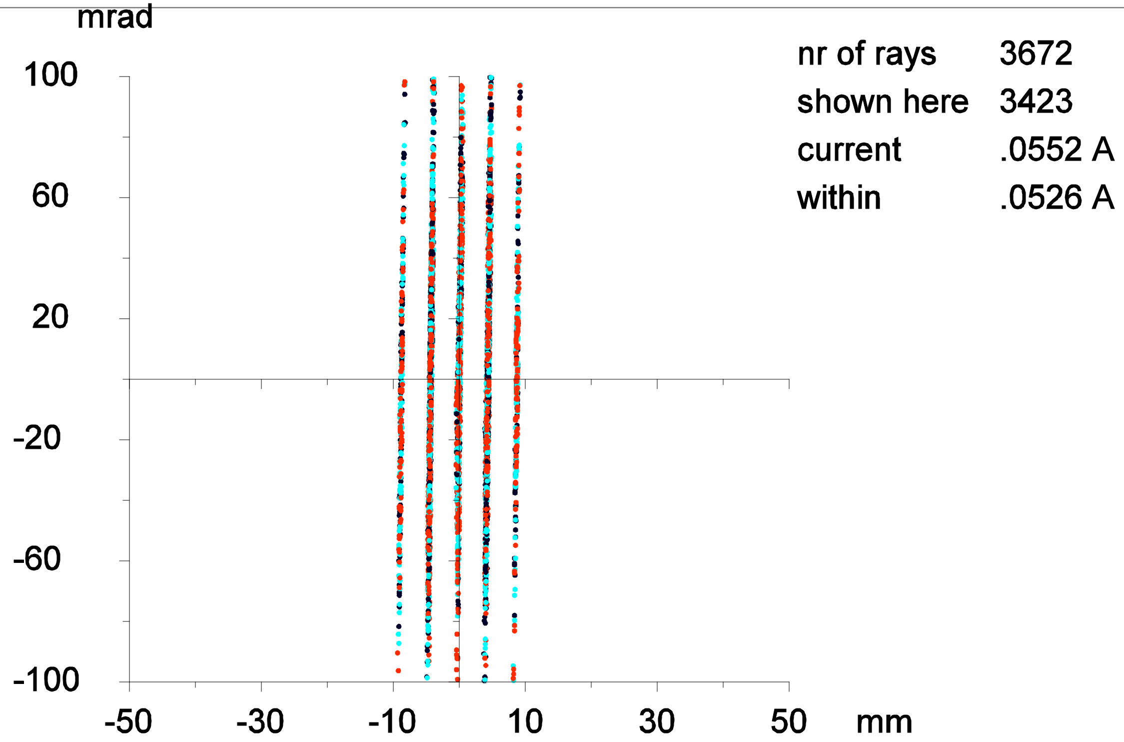


KOBRA3-INP
y emittance at 0.008 m
mrad
100
60
20
-20
-60
-100
-50
-30
-10
10
30
50
mm
nr of rays 3672
shown here 3407
current .0552 A
within .0524 A

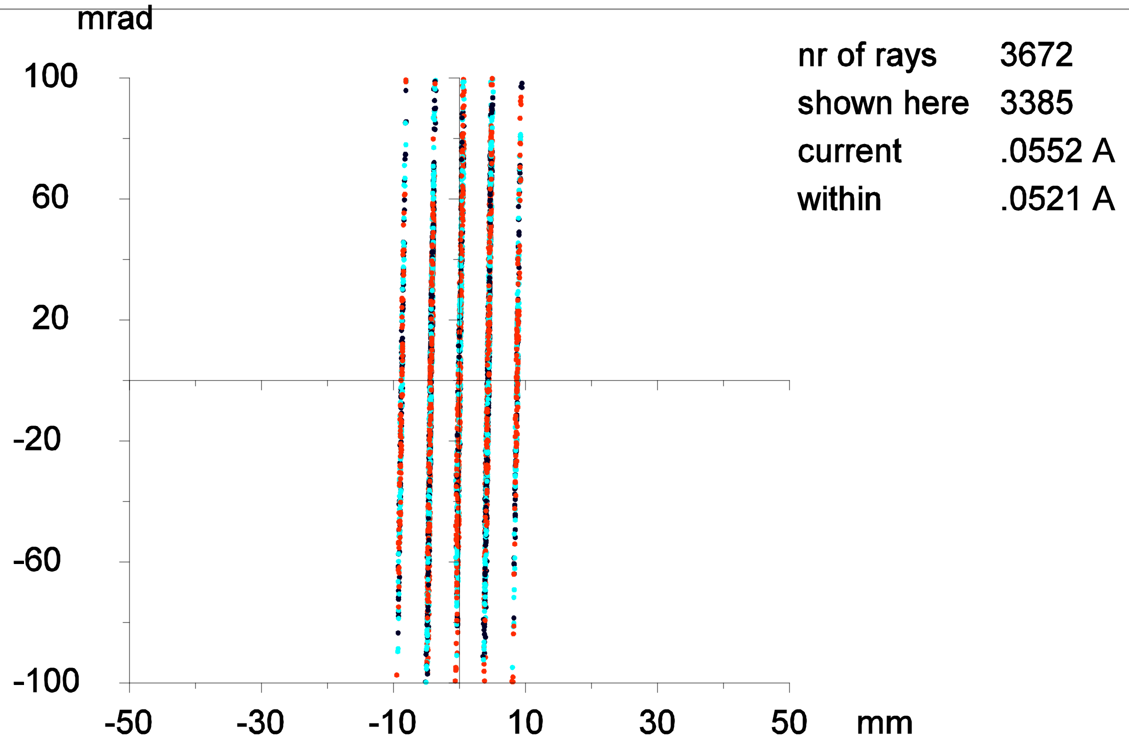

KOBRA3-INP
y emittance at 0.010 m
mrad
100
60
20
-20
-60
-100
-50
-30
-10
10
30
50
mm
nr of rays 3672
shown here 3496
current .0552 A
within .0534 A


KOBRA3-INP
y emittance at 0.012 m
mrad
100
60
20
-20
-60
-100
-50
-30
-10
10
30
50
mm
nr of rays 3672
shown here 3456
current .0552 A
within .0530 A

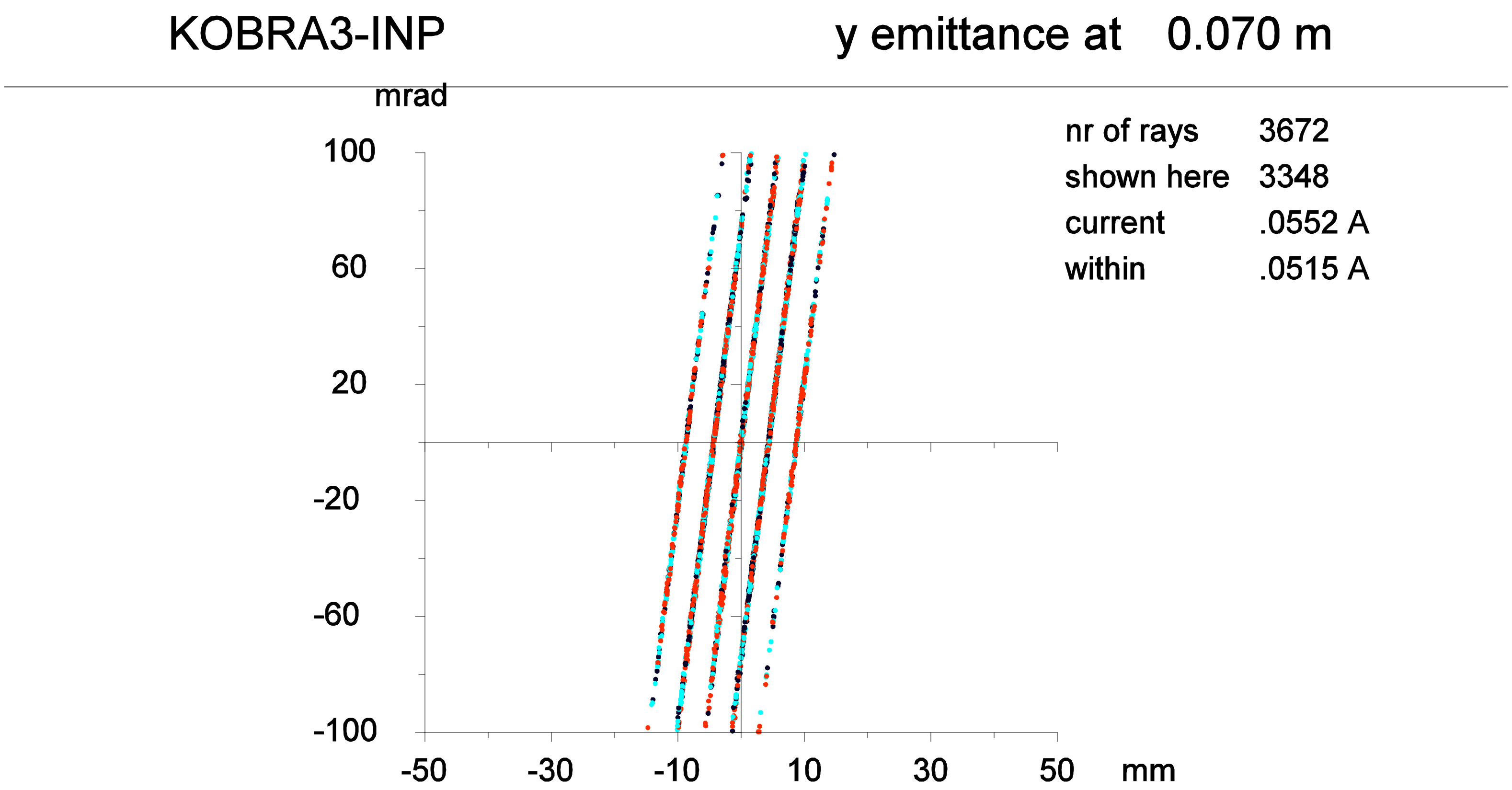
KOBRA3-INP y emittance at 0.014 m



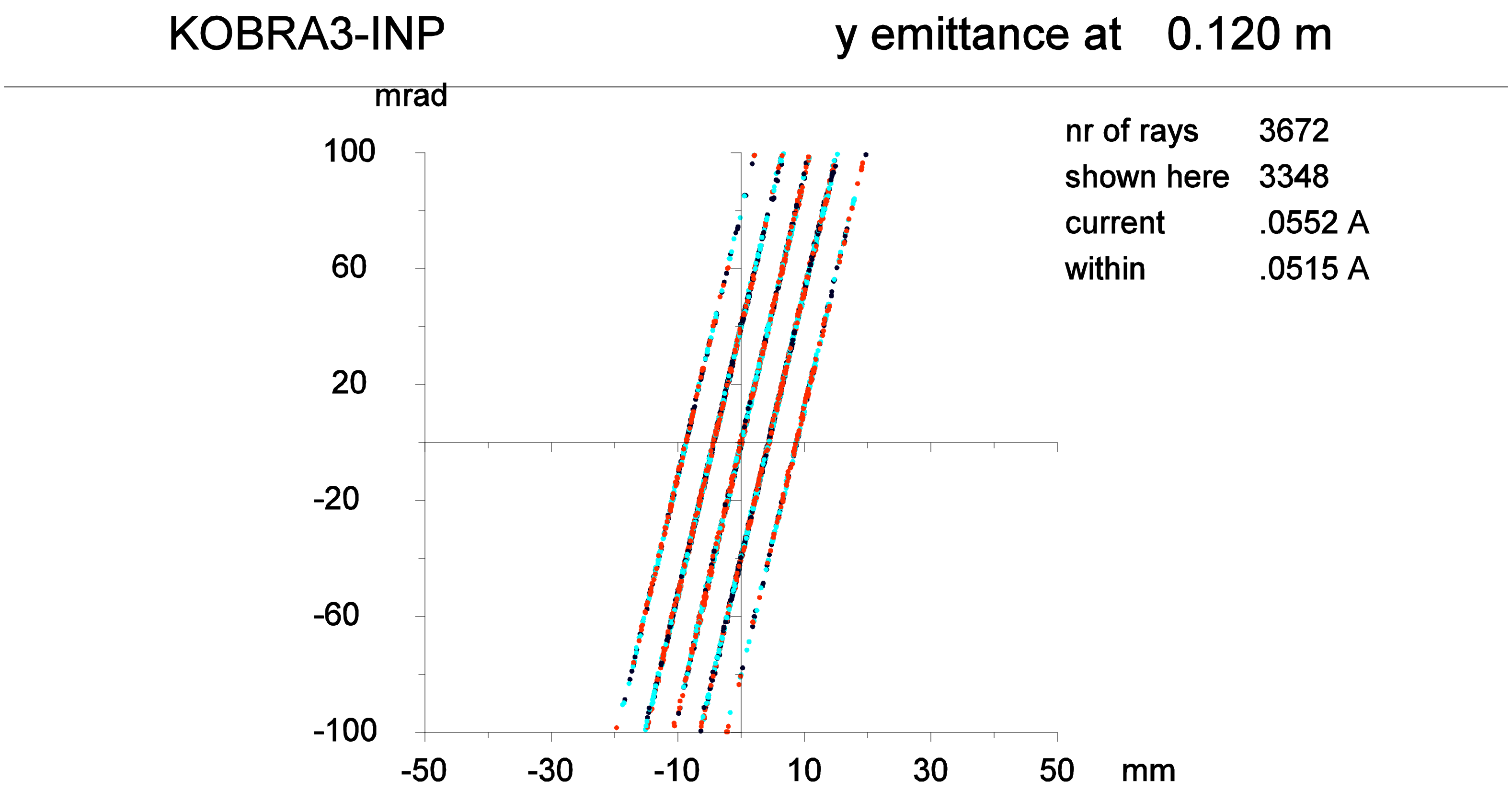
KOBRA3-INP y emittance at 0.016 m



drift

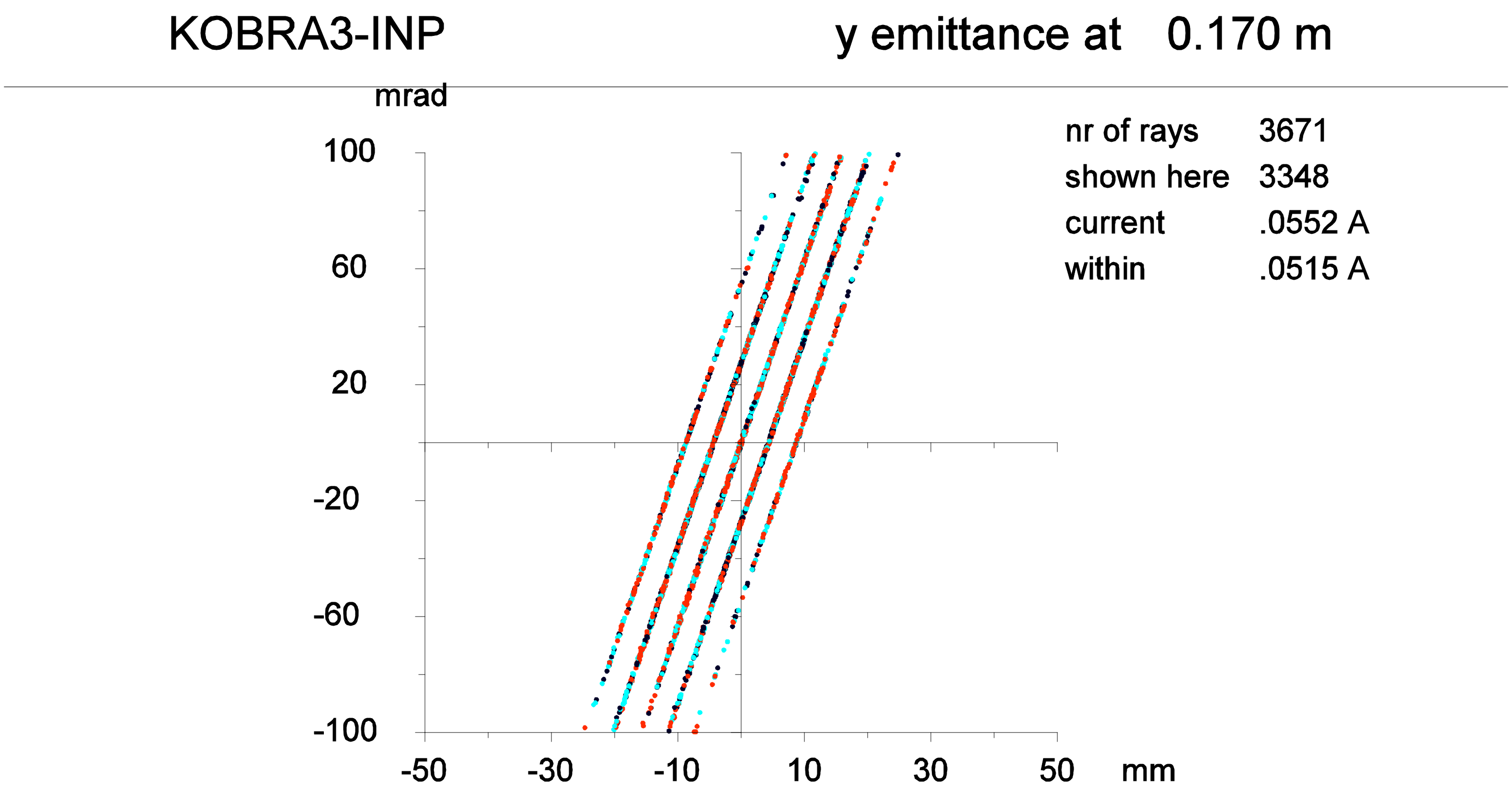

KOBRA3-INP
y emittance at 0.070 m
mrad
100
60
20
-20
-60
-100
-50
-30
-10
10
30
50
mm
nr of rays 3672
shown here 3348
current .0552 A
within .0515 A

drift



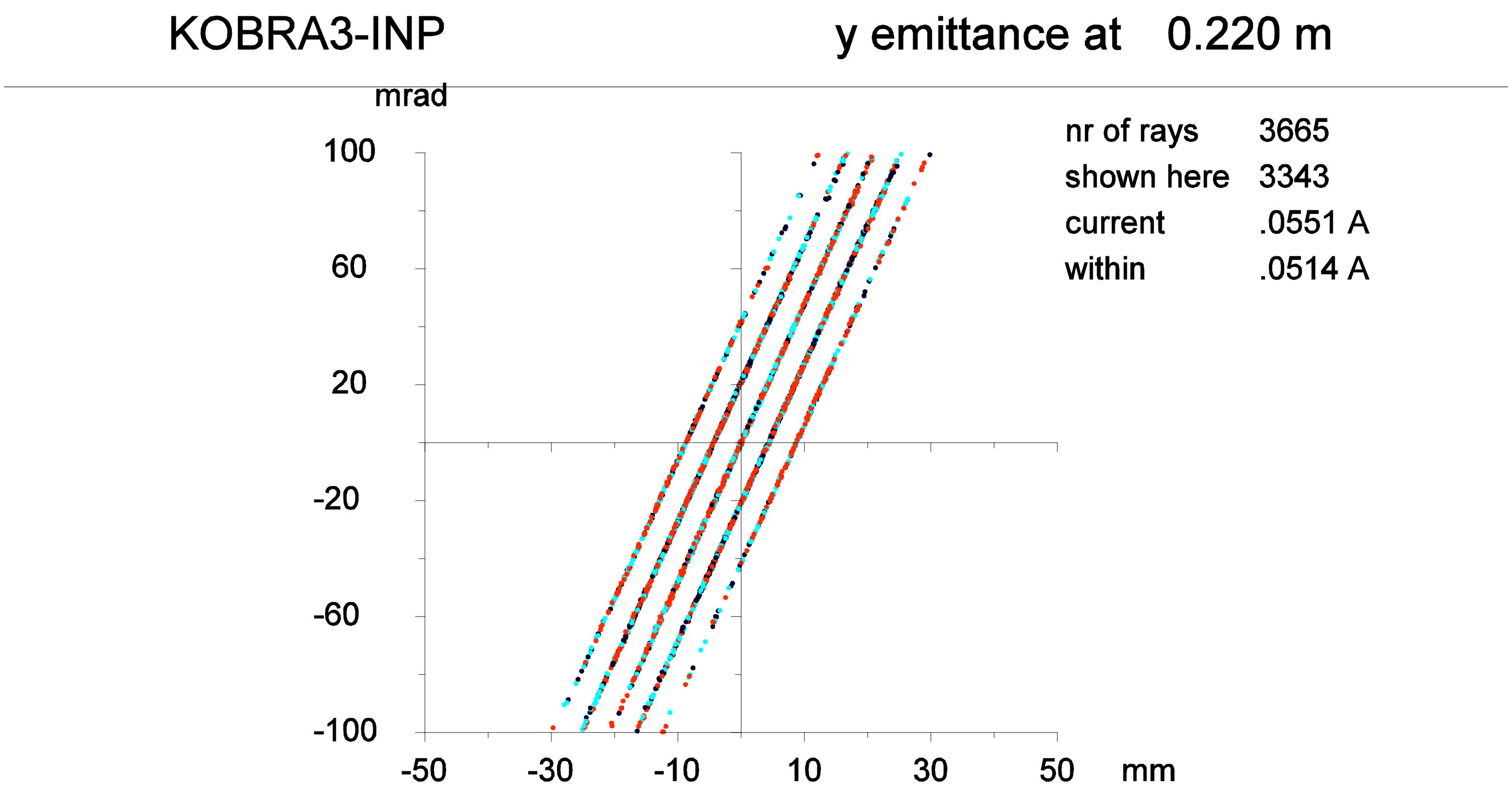
KOBRA3-INP
y emittance at 0.120 m
mrad
100
60
20
-20
-60
-100
-50
-30
-10
10
30
50
mm
nr of rays 3672
shown here 3348
current .0552 A
within .0515 A

drift

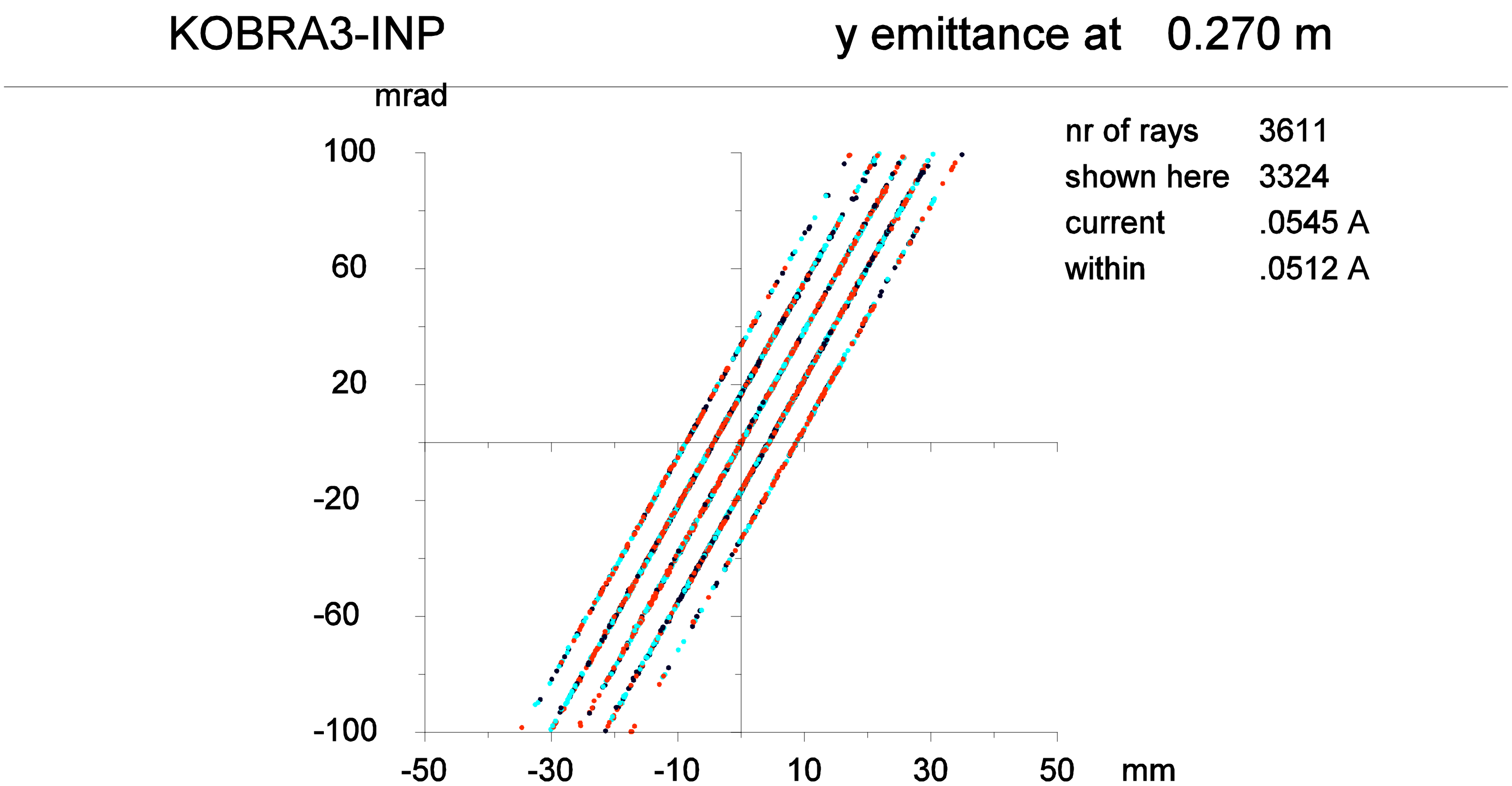


KOBRA3-INP
y emittance at 0.170 m
mrad
100
60
20
-20
-60
-100
-50
-30
-10
10
30
50
mm
nr of rays 3671
shown here 3348
current .0552 A
within .0515 A

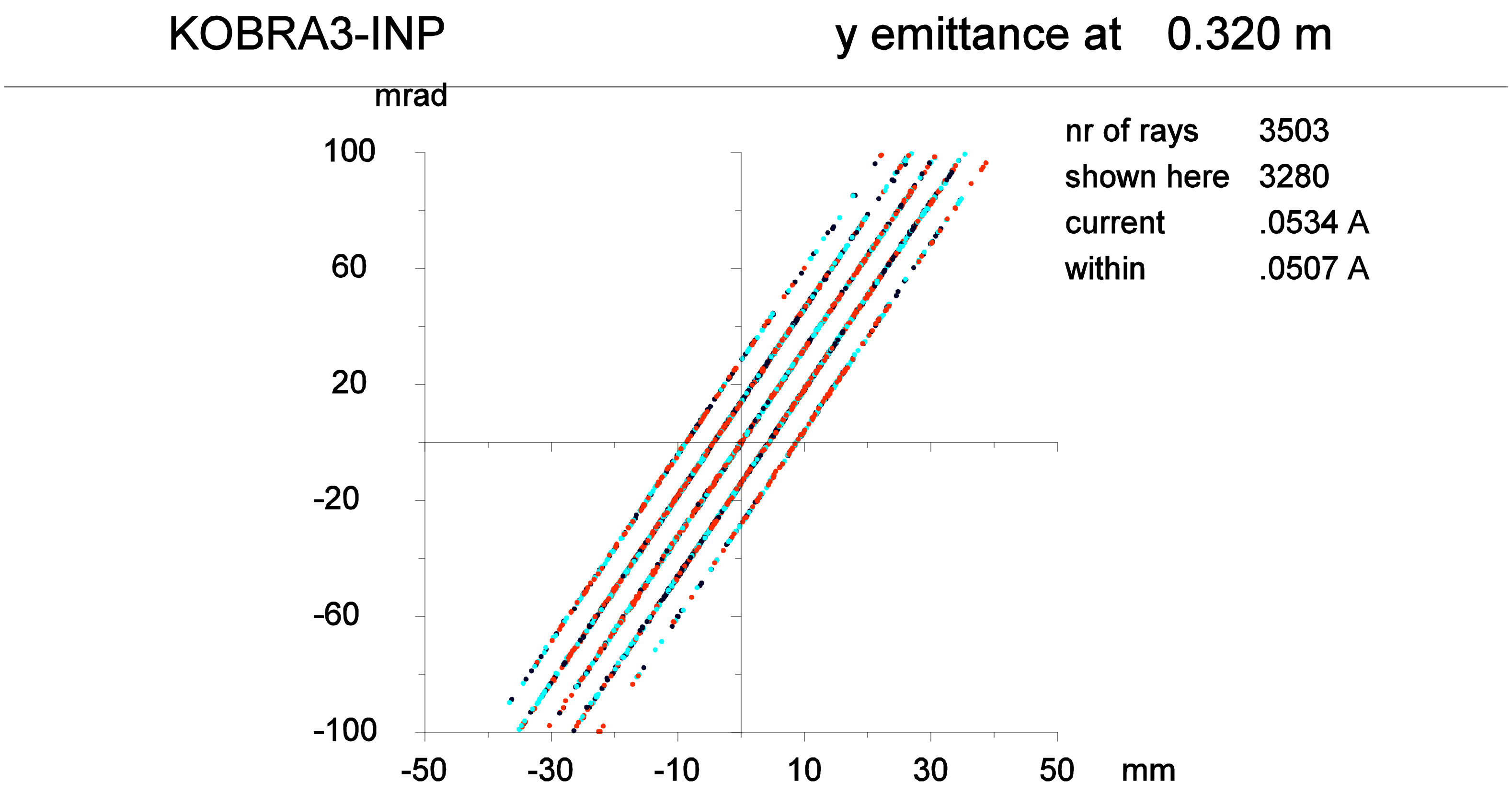
drift


KOBRA3-INP
y emittance at 0.220 m
mrad
nr of rays 3665
shown here 3343
current .0551 A
within .0514 A
100
60
20
-20
-60
-100
-50
-30
-10
10
30
50
mm

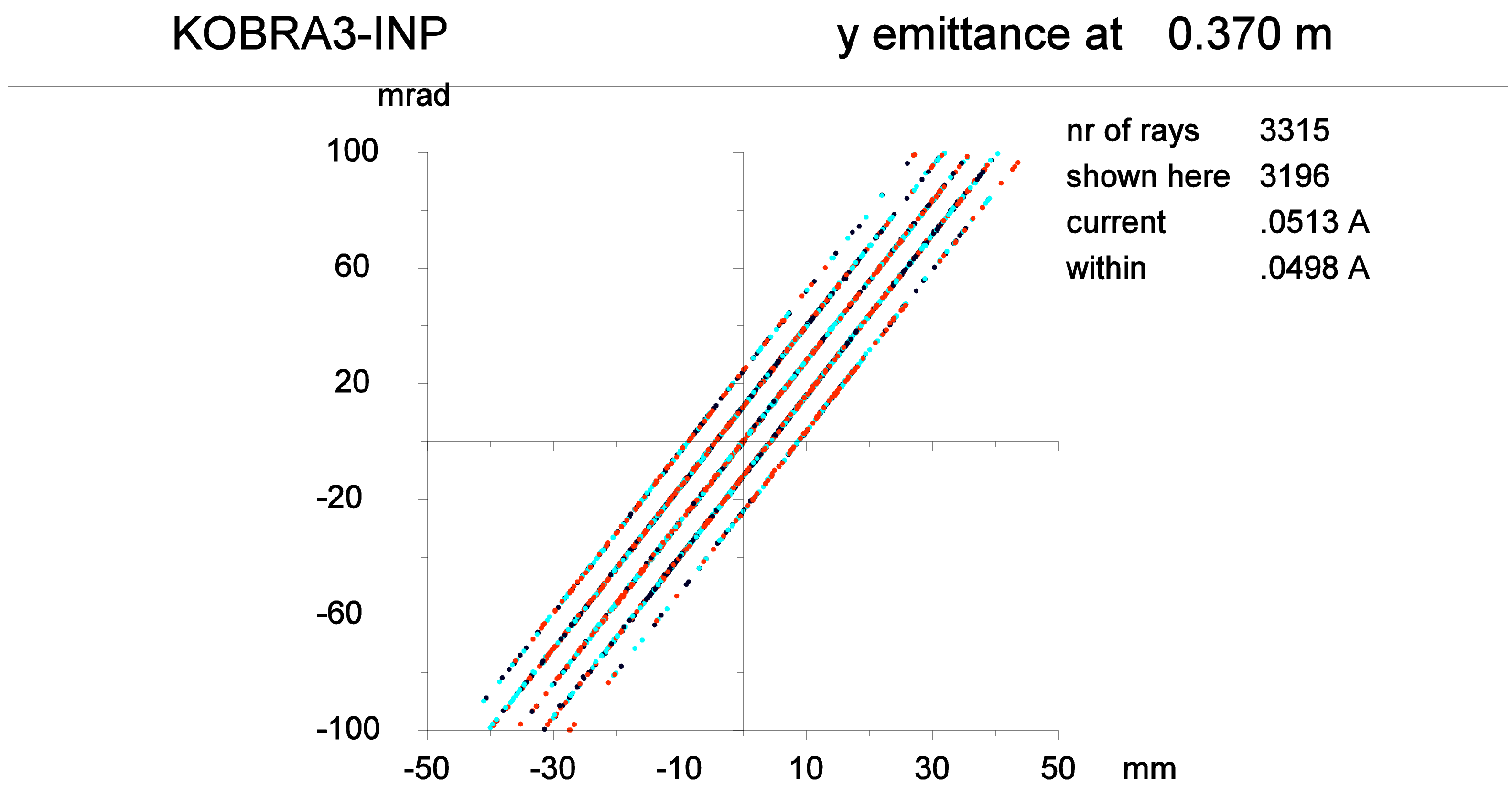
drift


KOBRA3-INP
y emittance at 0.270 m
mrad
100
60
20
-20
-60
-100
-50
-30
-10
10
30
50
mm
nr of rays 3611
shown here 3324
current .0545 A
within .0512 A

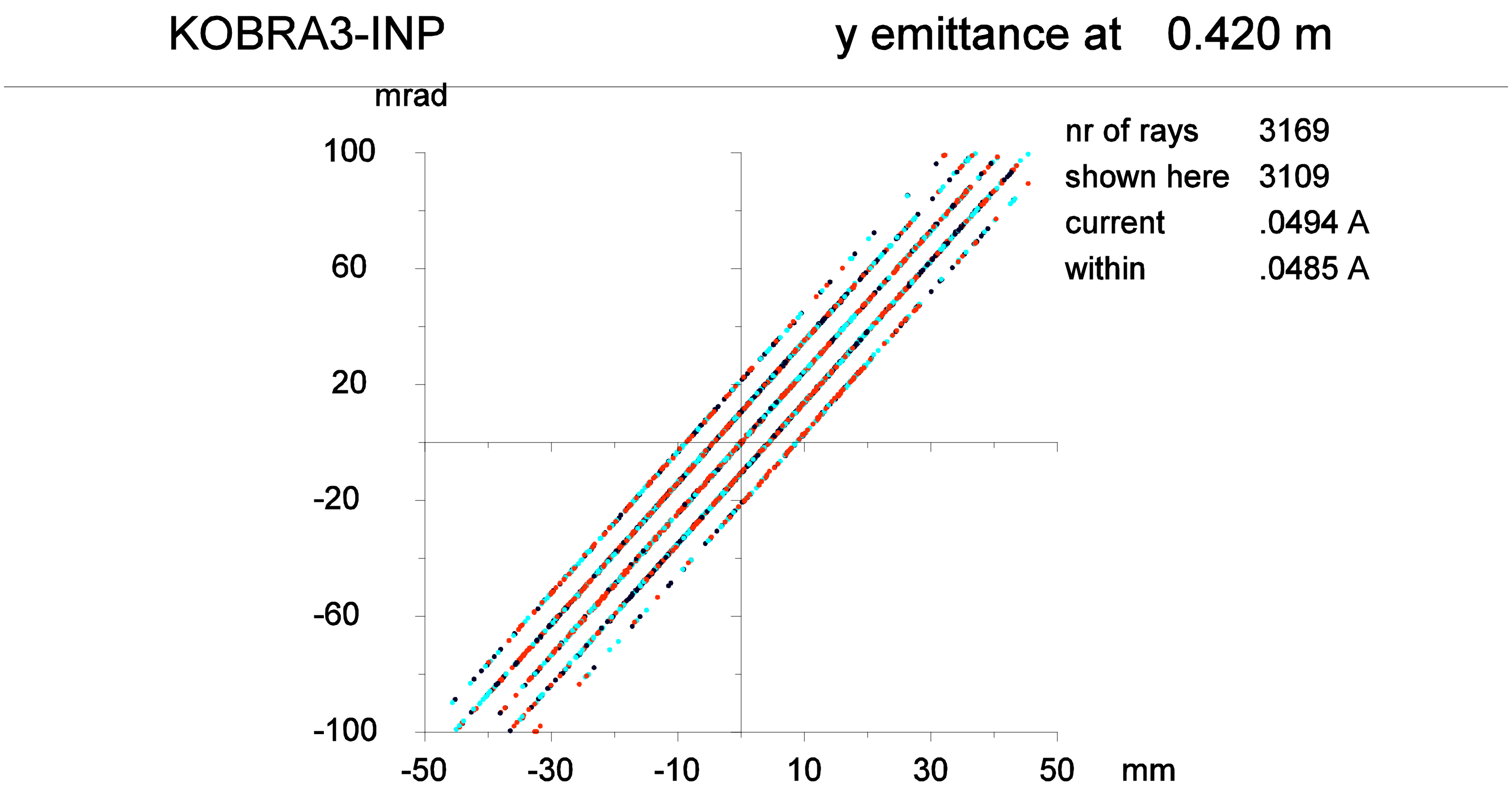
drift


KOBRA3-INP
y emittance at 0.320 m
mrad
100
60
20
-20
-60
-100
-50
-30
-10
10
30
50
mm
nr of rays 3503
shown here 3280
current .0534 A
within .0507 A

drift

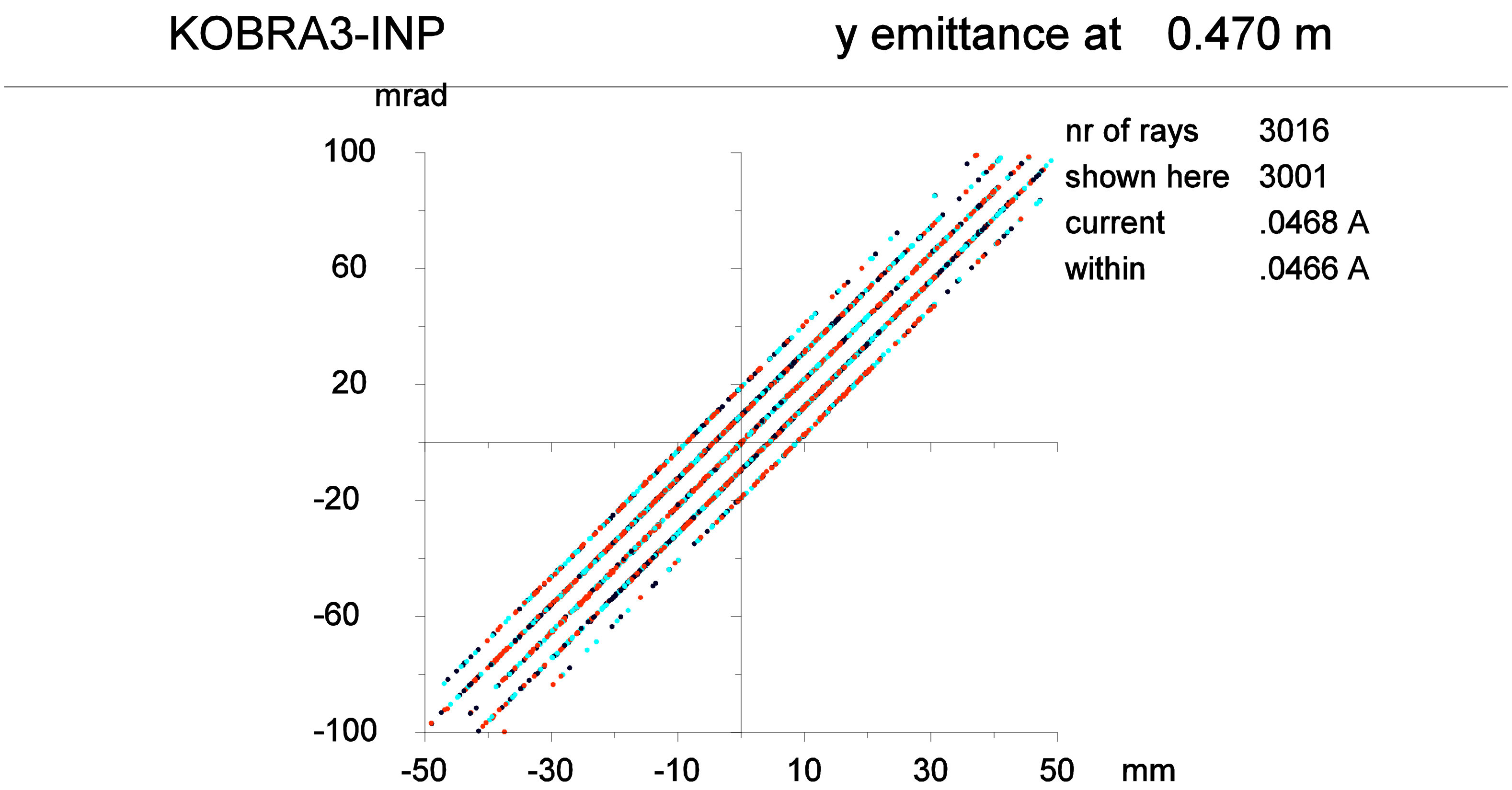

KOBRA3-INP
y emittance at 0.370 m
mrad
100
60
20
-20
-60
-100
-50
-30
-10
10
30
50
mm
nr of rays 3315
shown here 3196
current .0513 A
within .0498 A

drift

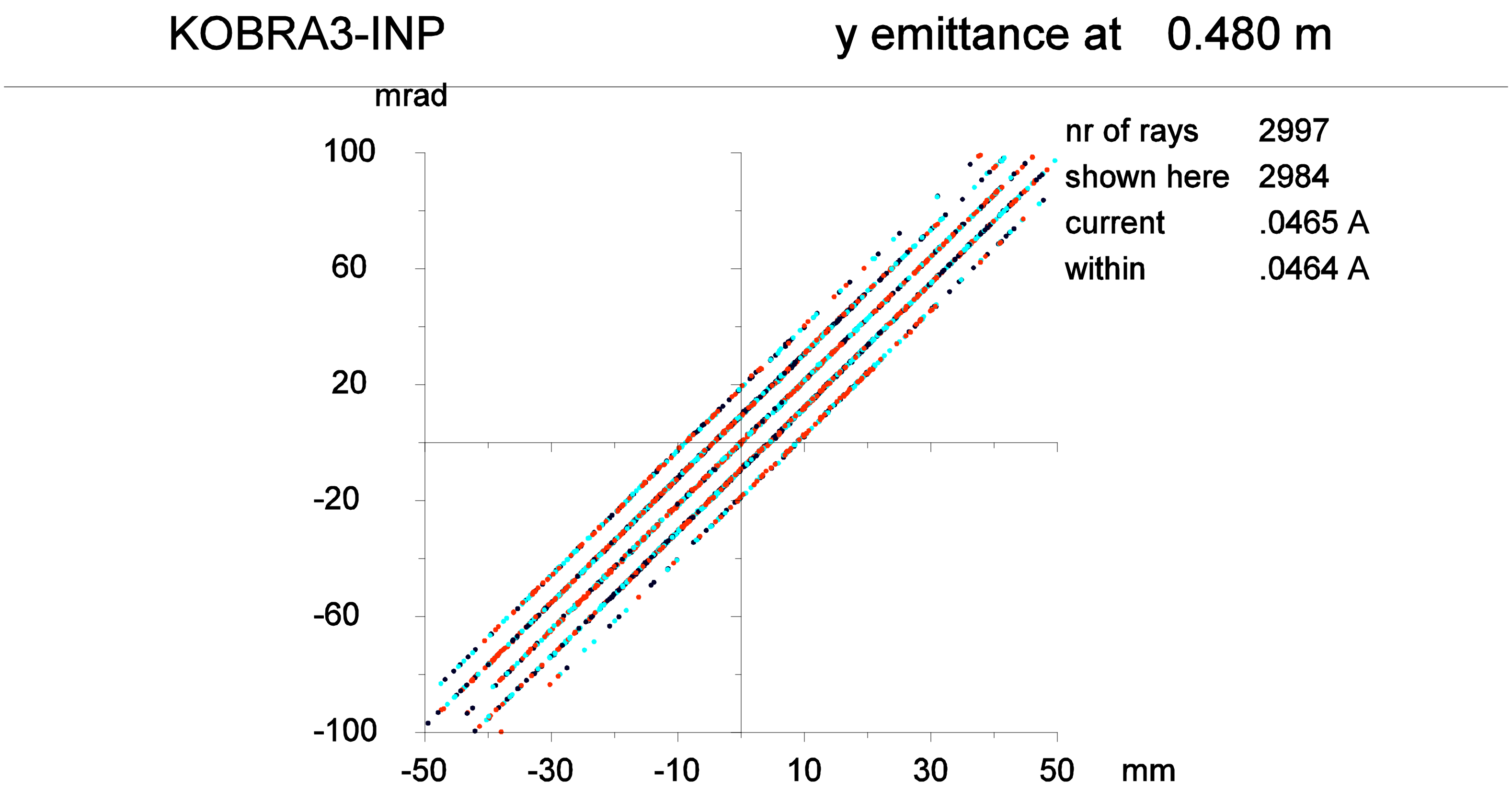


KOBRA3-INP
y emittance at 0.420 m
mrad
100
60
20
-20
-60
-100
-50
-30
-10
10
30
50
mm
nr of rays 3169
shown here 3109
current .0494 A
within .0485 A

drift

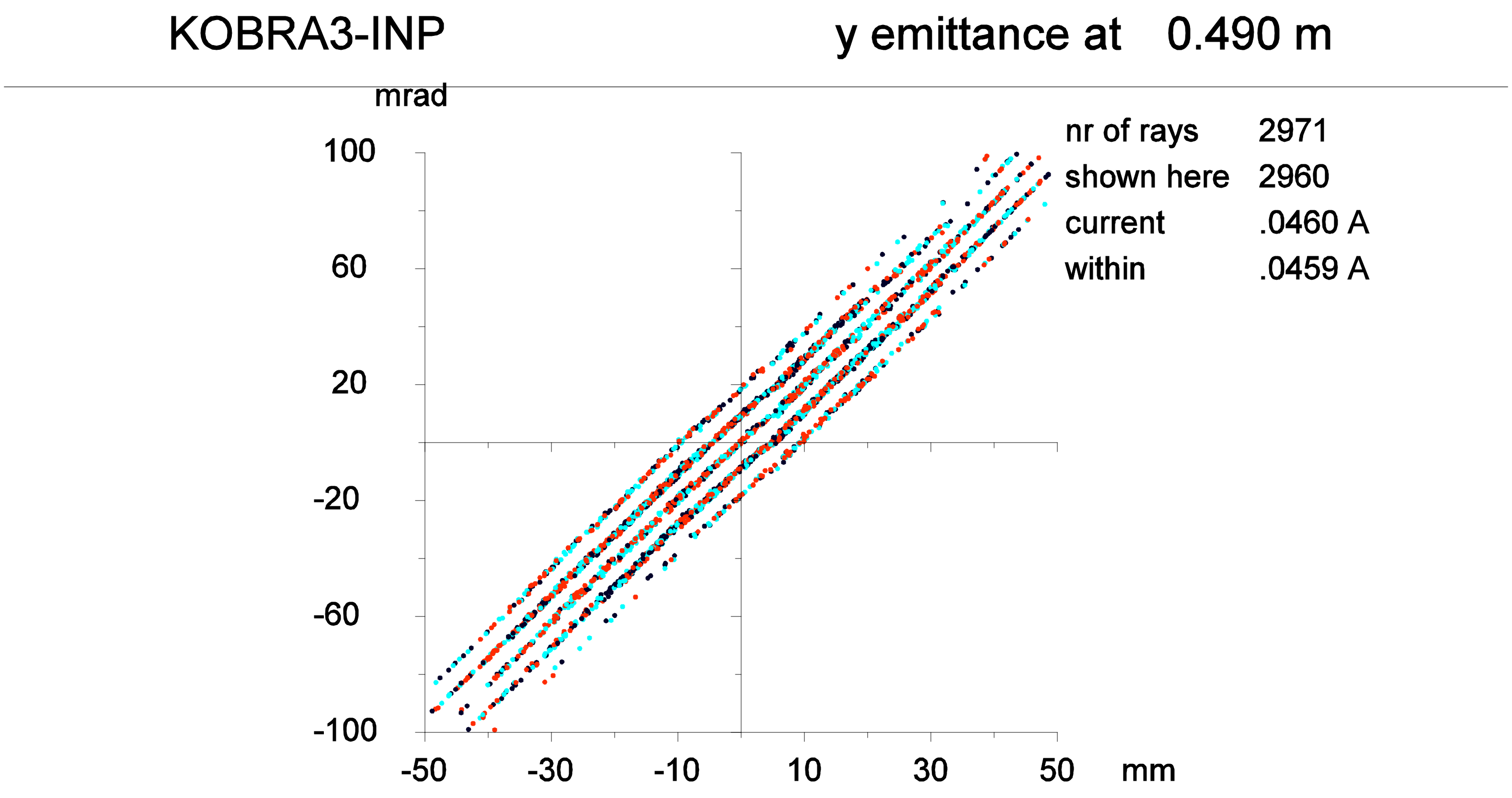

KOBRA3-INP
y emittance at 0.470 m
mrad
100
60
20
-20
-60
-100
-50
-30
-10
10
30
50
mm
nr of rays 3016
shown here 3001
current .0468 A
within .0466 A

drift

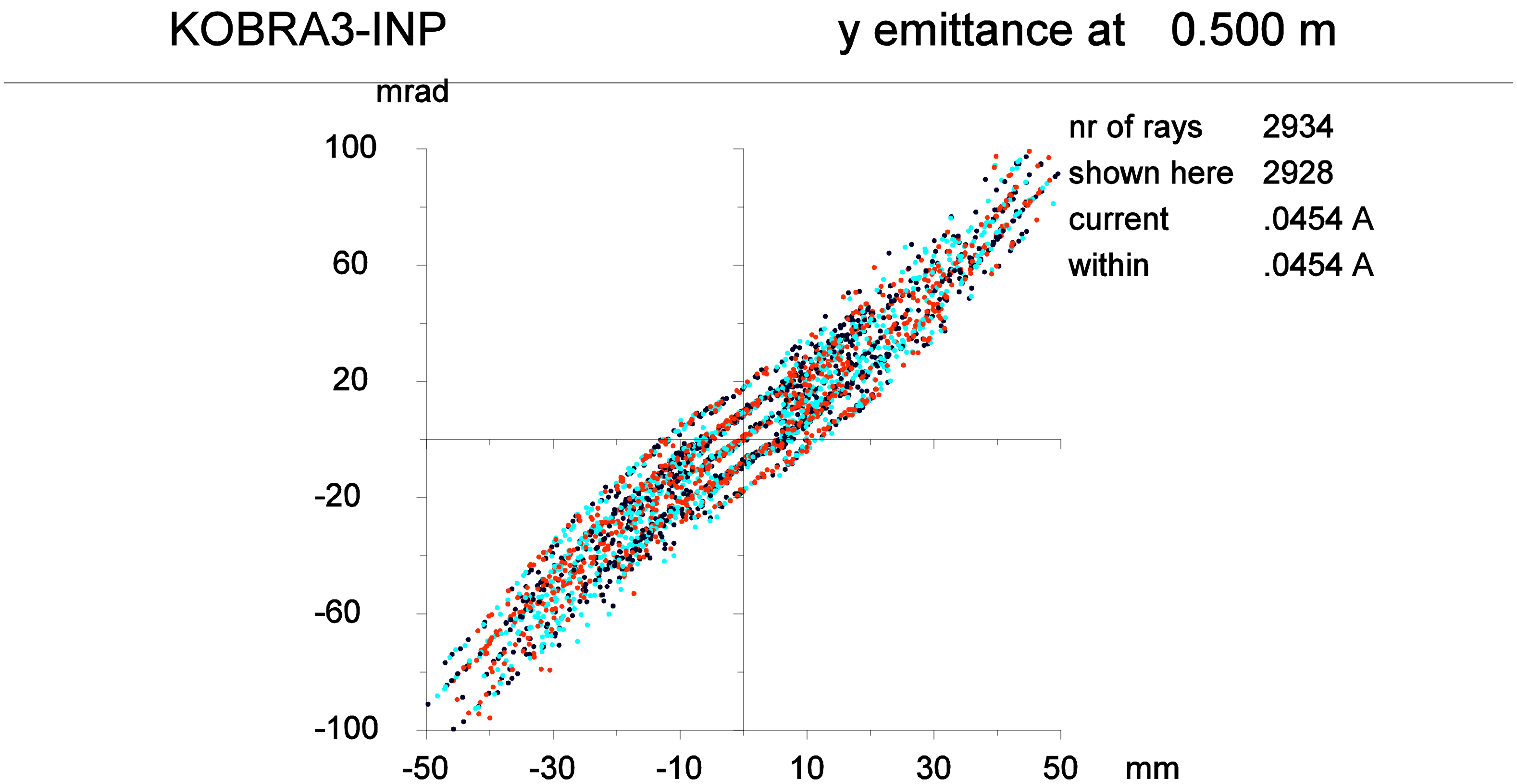


KOBRA3-INP
y emittance at 0.480 m
mrad
100
60
20
-20
-60
-100
-50
-30
-10
10
30
50
mm
nr of rays 2997
shown here 2984
current .0465 A
within .0464 A

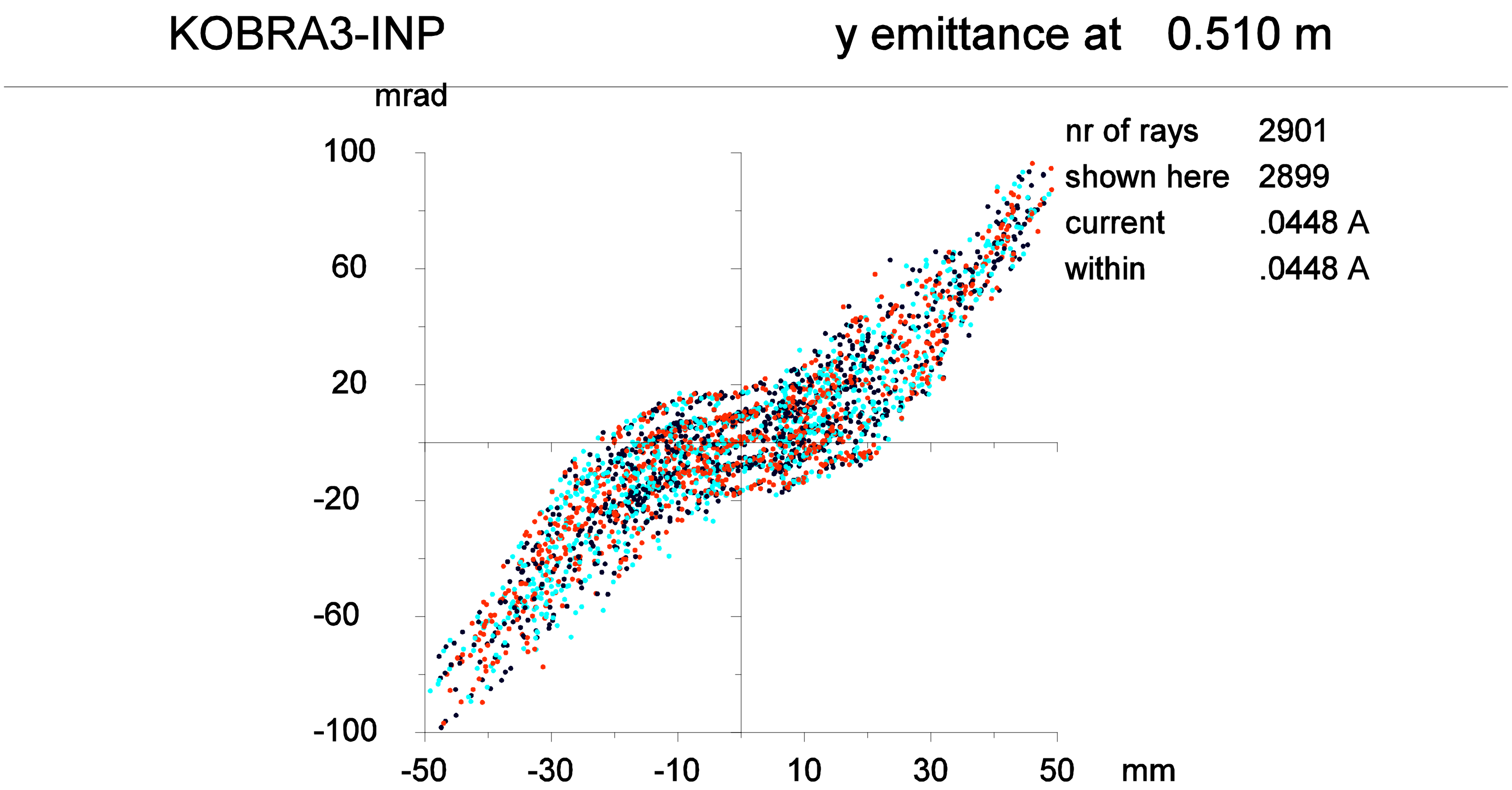
drift


KOBRA3-INP
y emittance at 0.490 m
mrad
100
60
20
-20
-60
-100
-50
-30
-10
10
30
50
mm
nr of rays 2971
shown here 2960
current .0460 A
within .0459 A

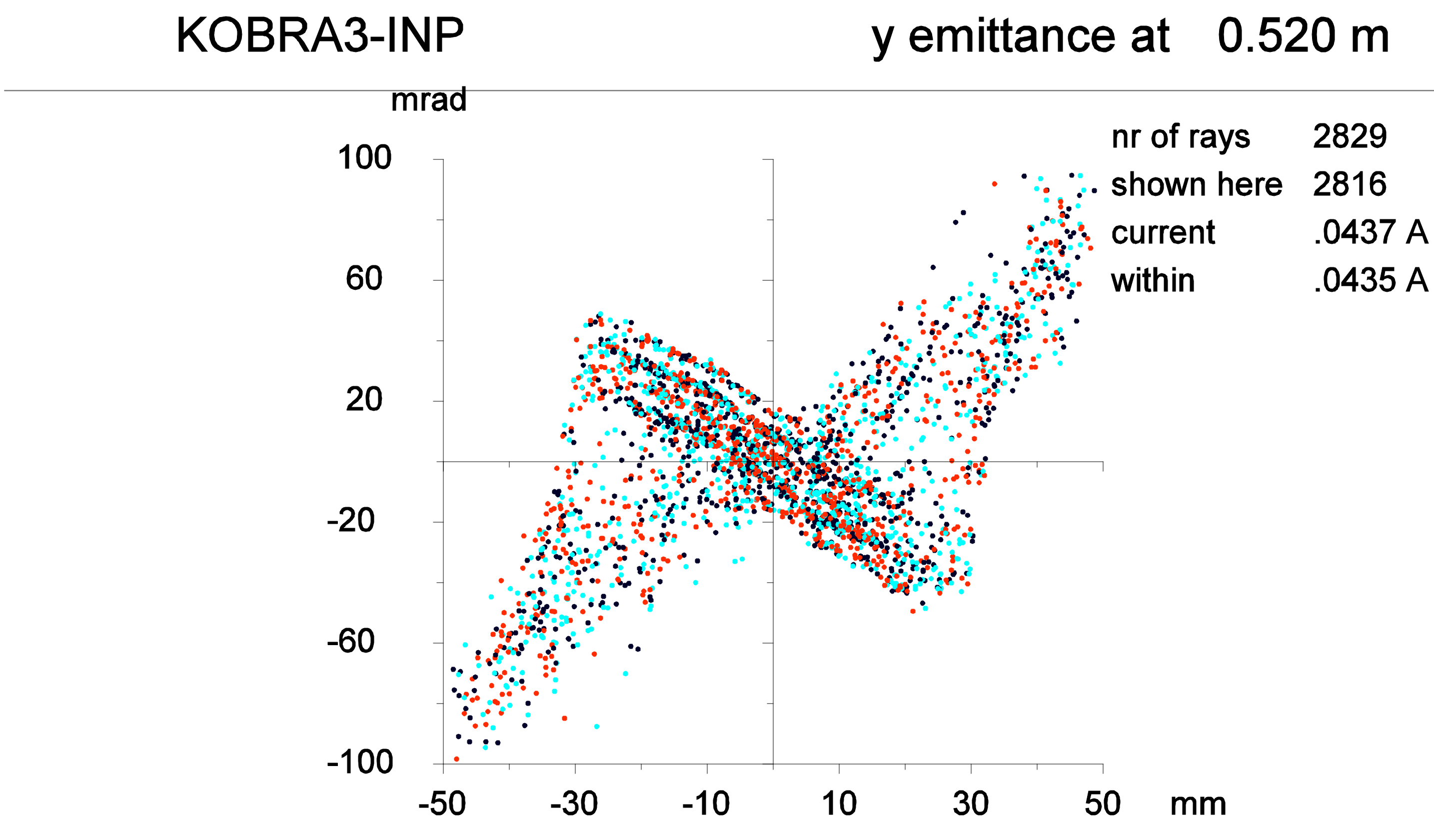
acceleration



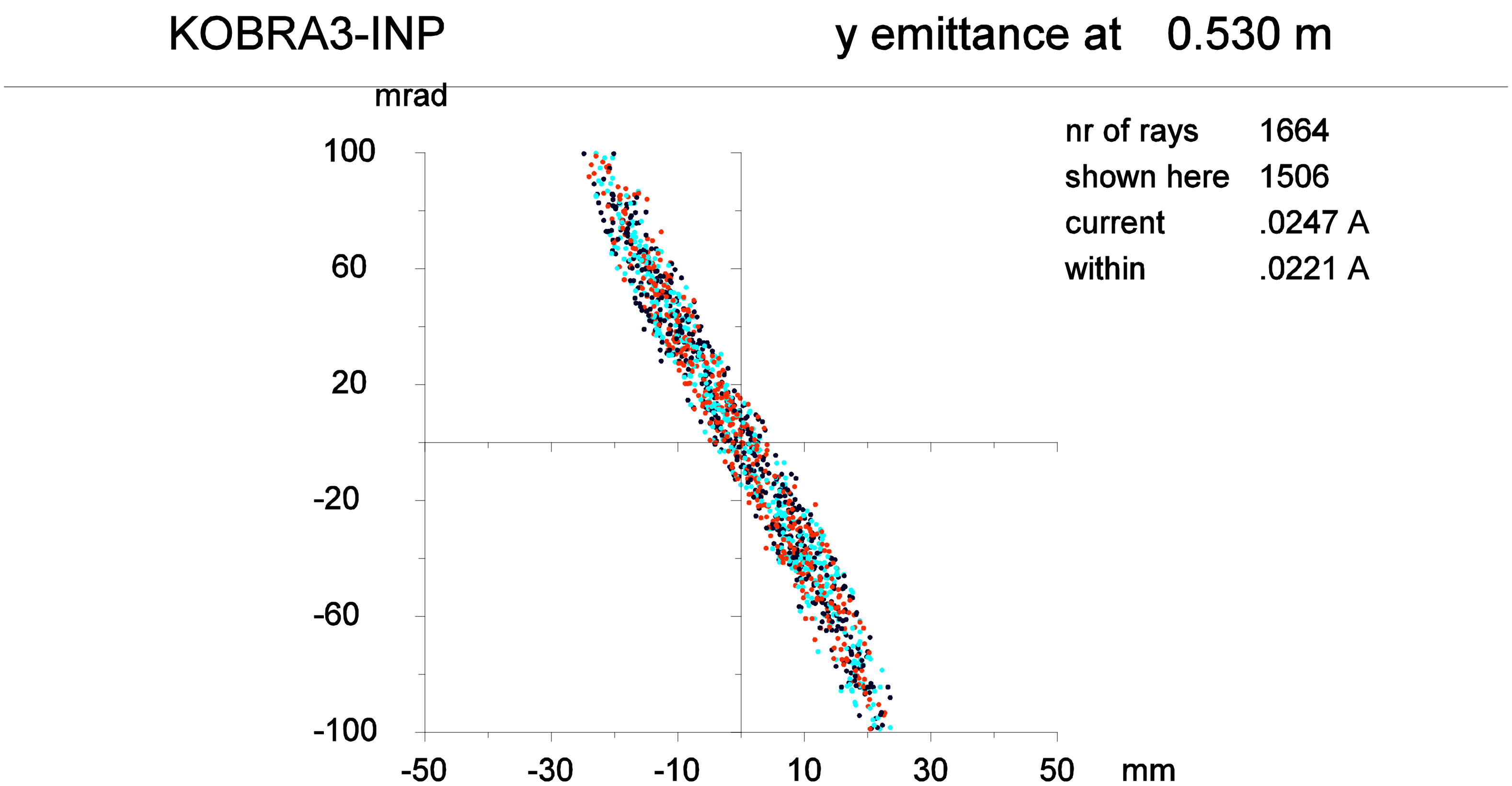
acceleration



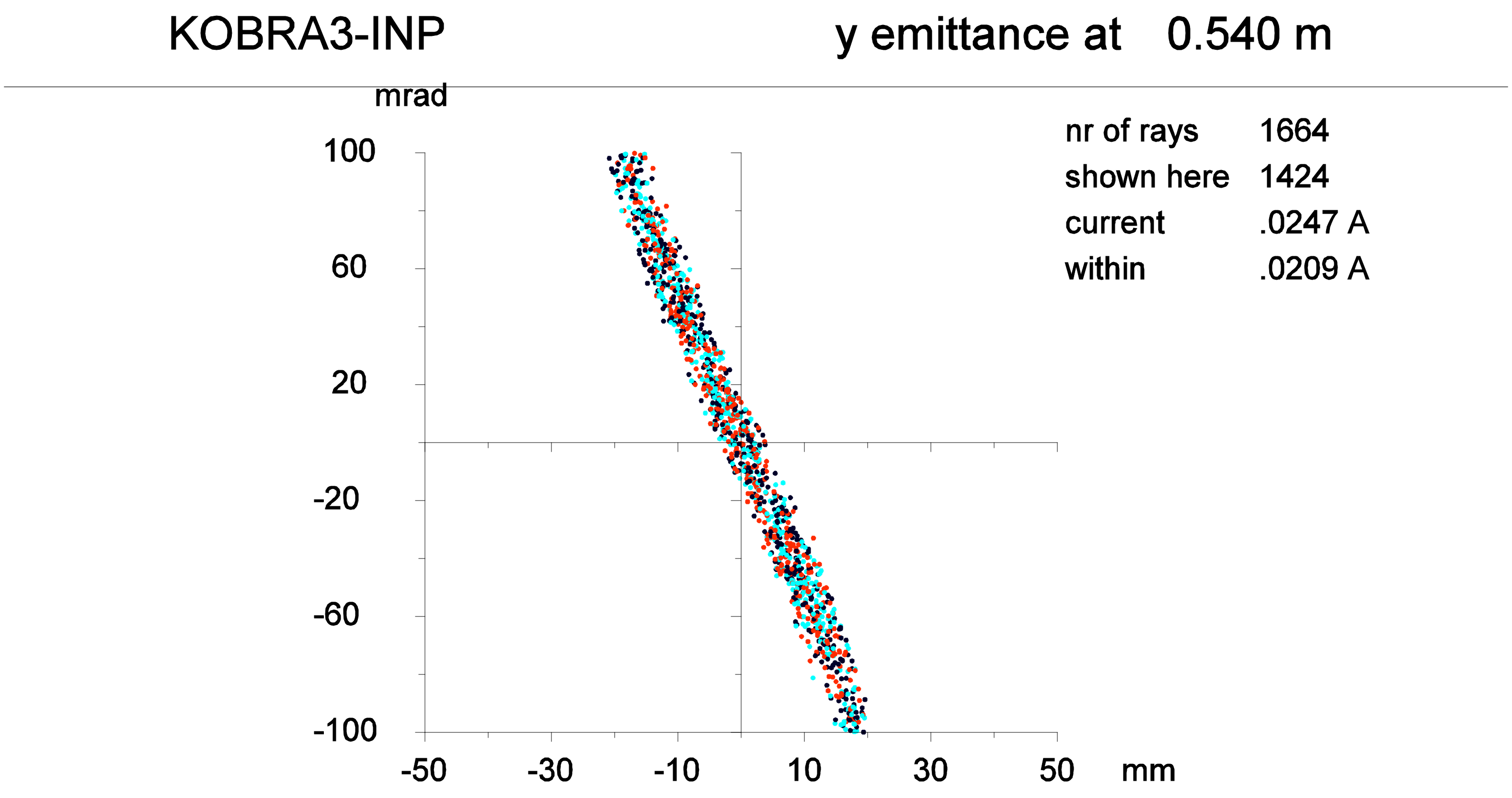
acceleration



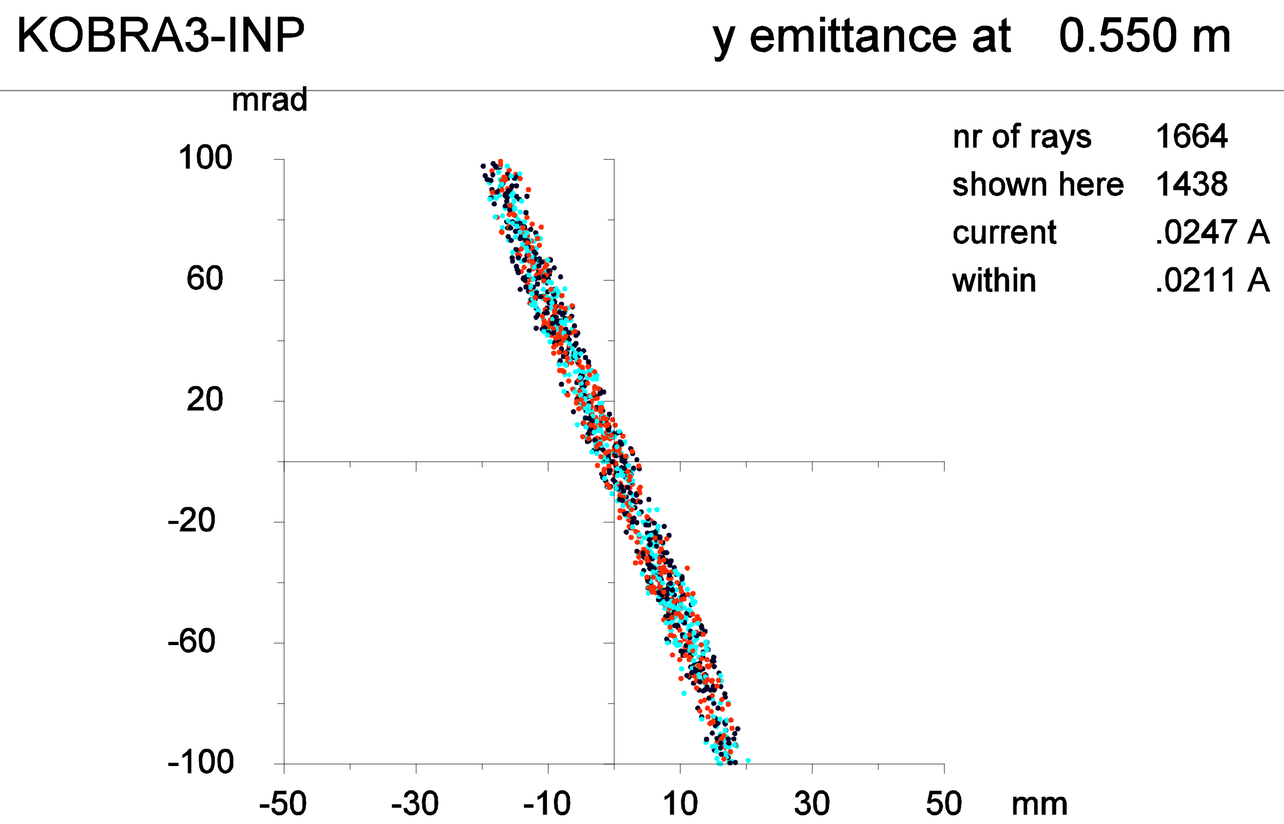
acceleration



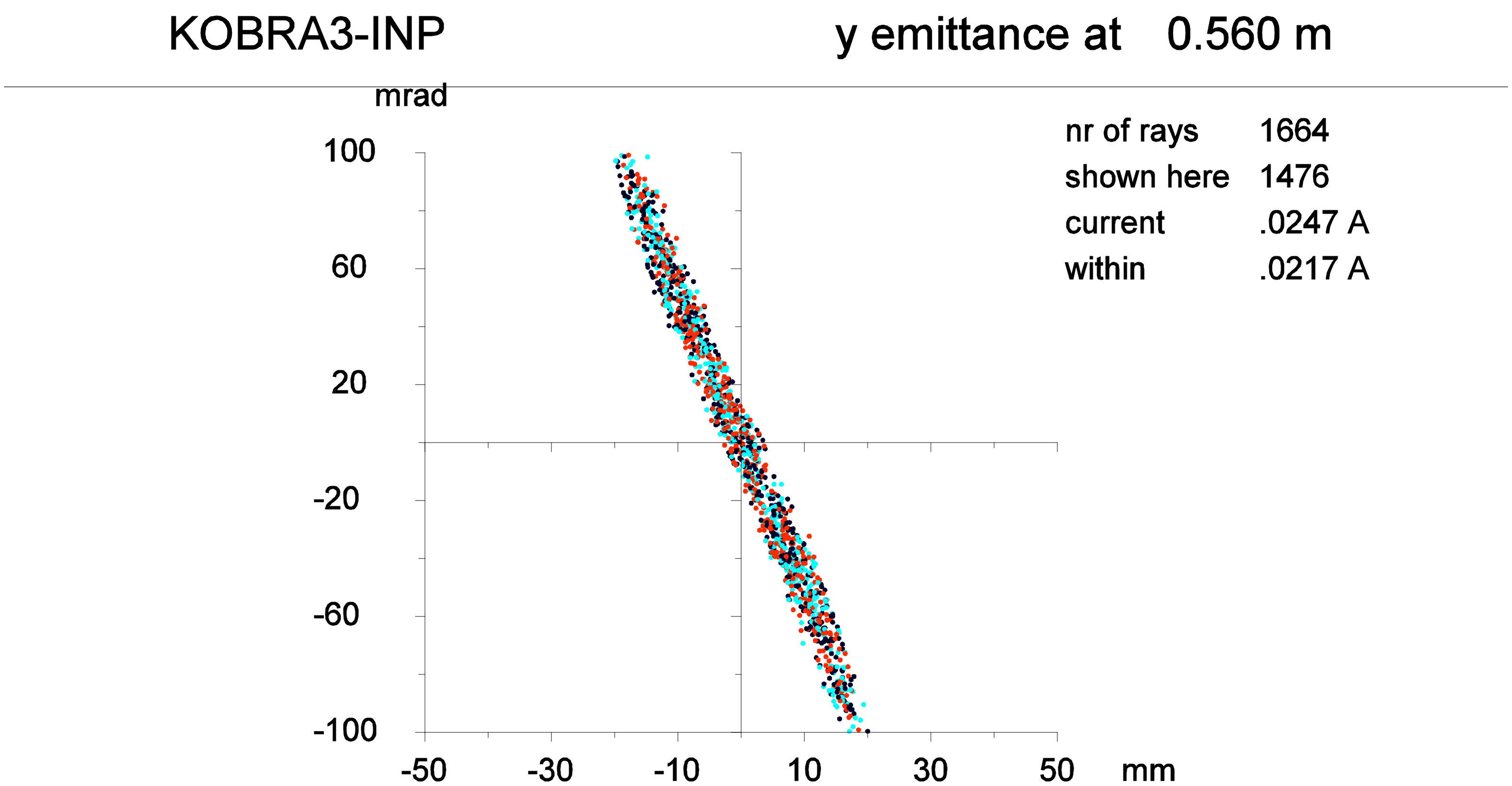
acceleration



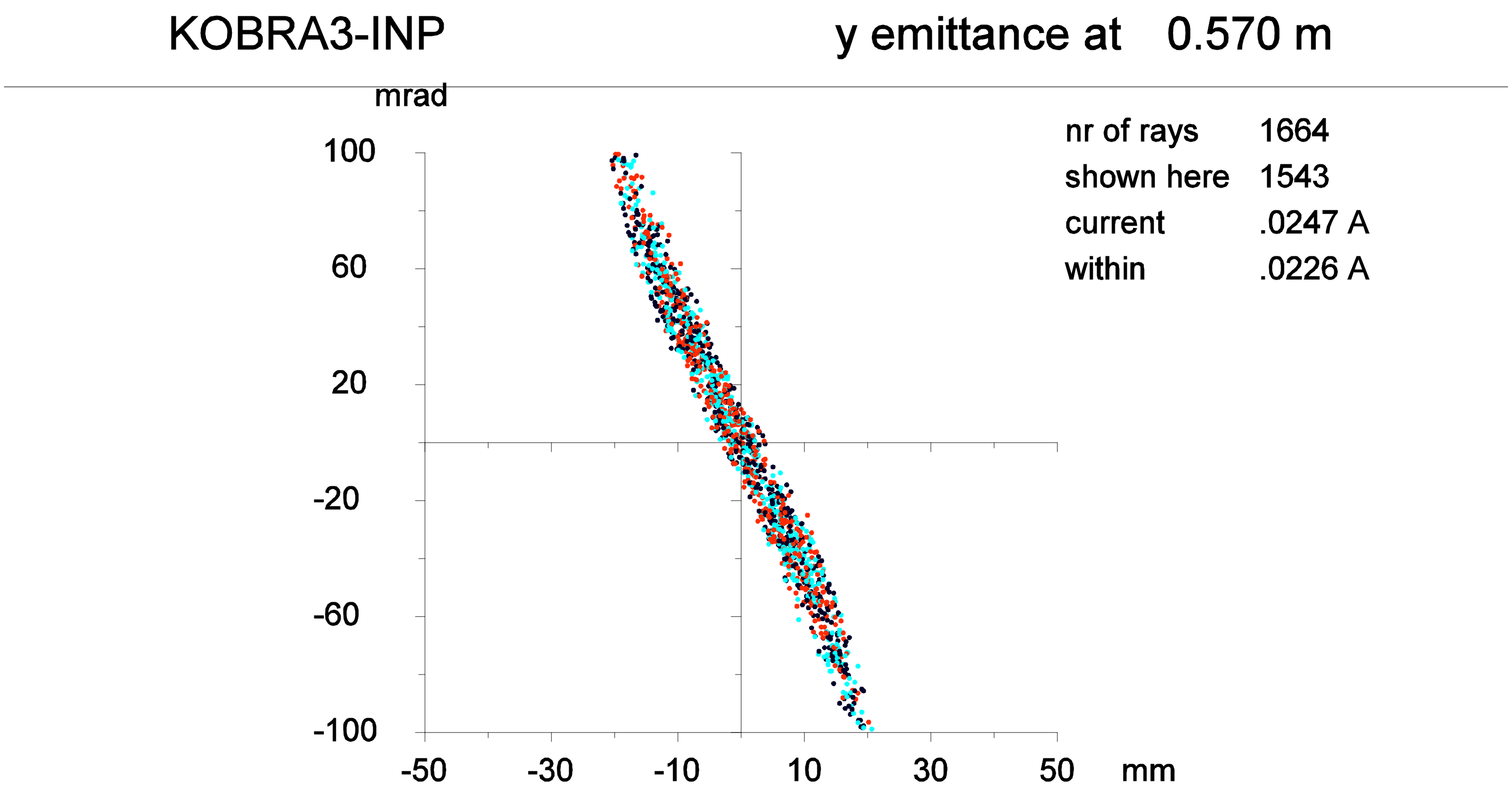
acceleration



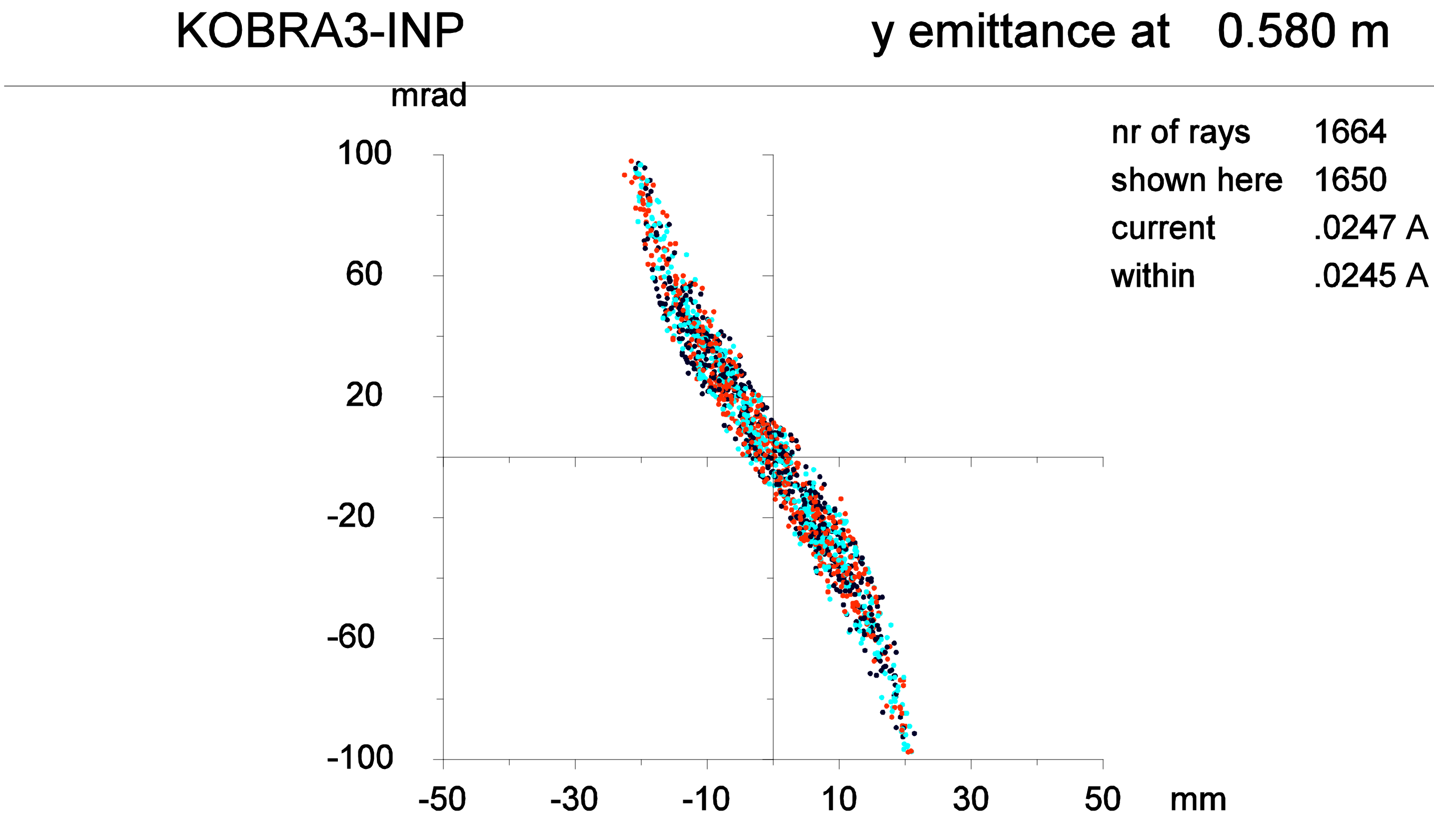
acceleration



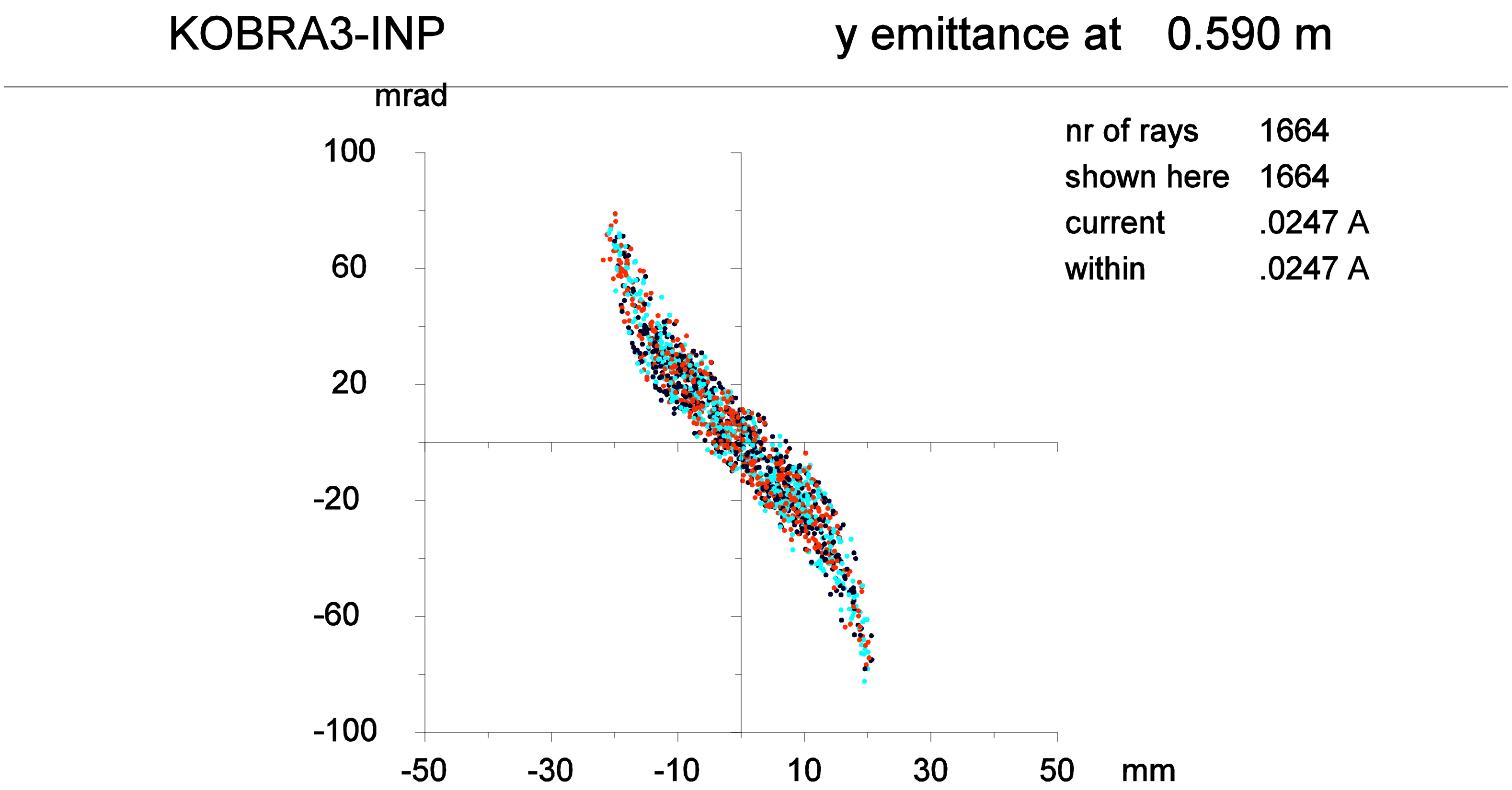
acceleration



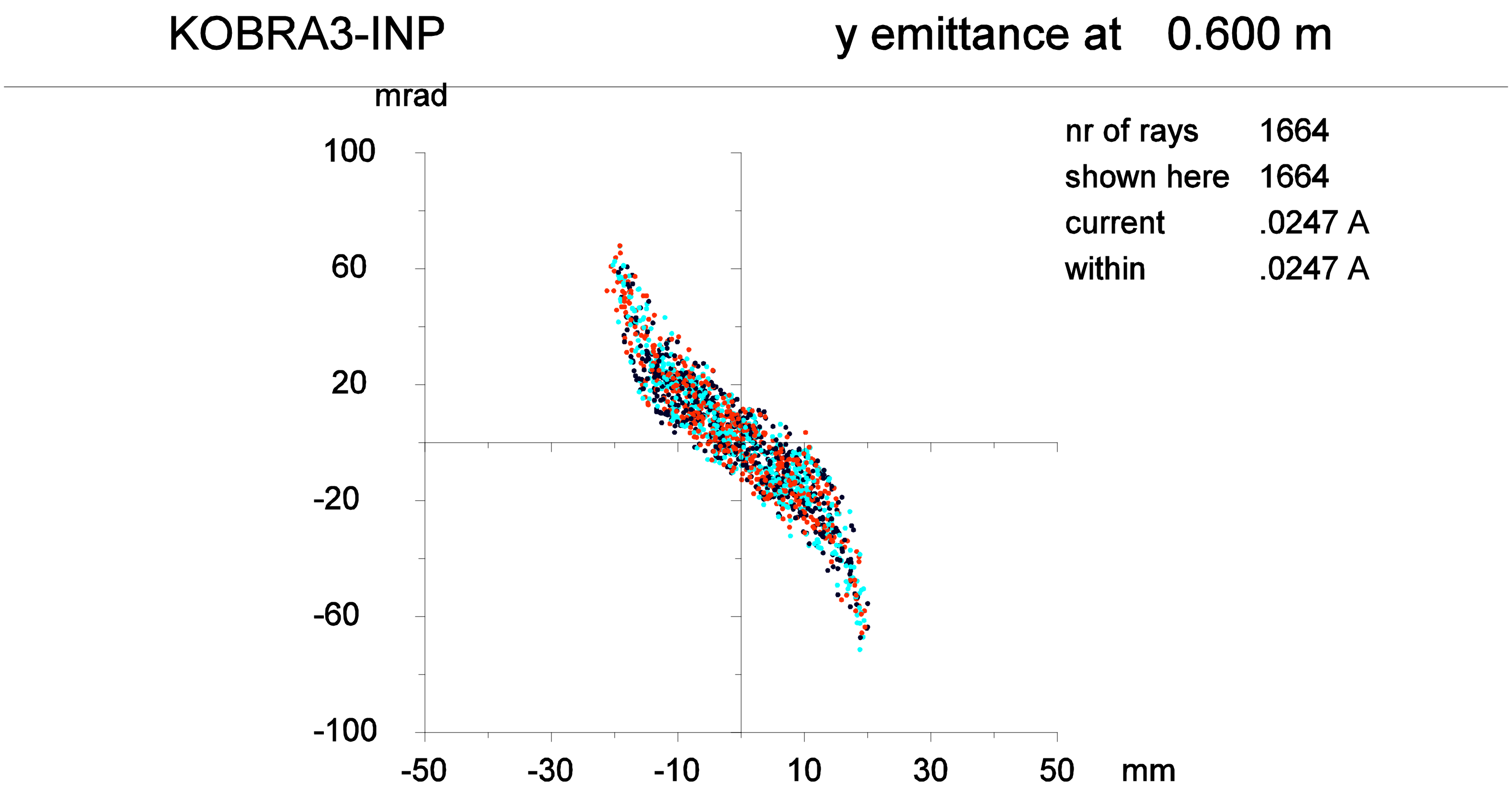
acceleration



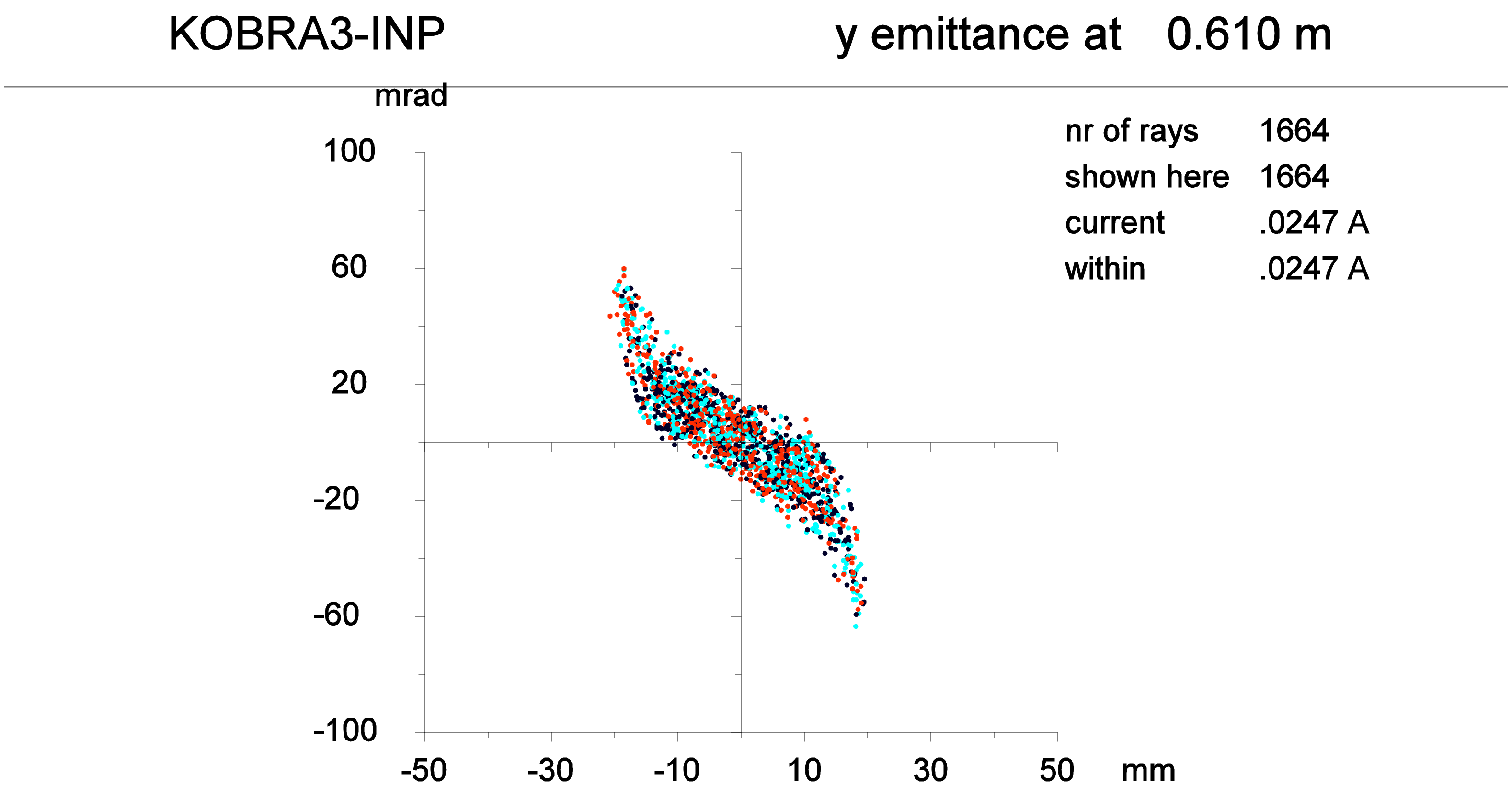
acceleration



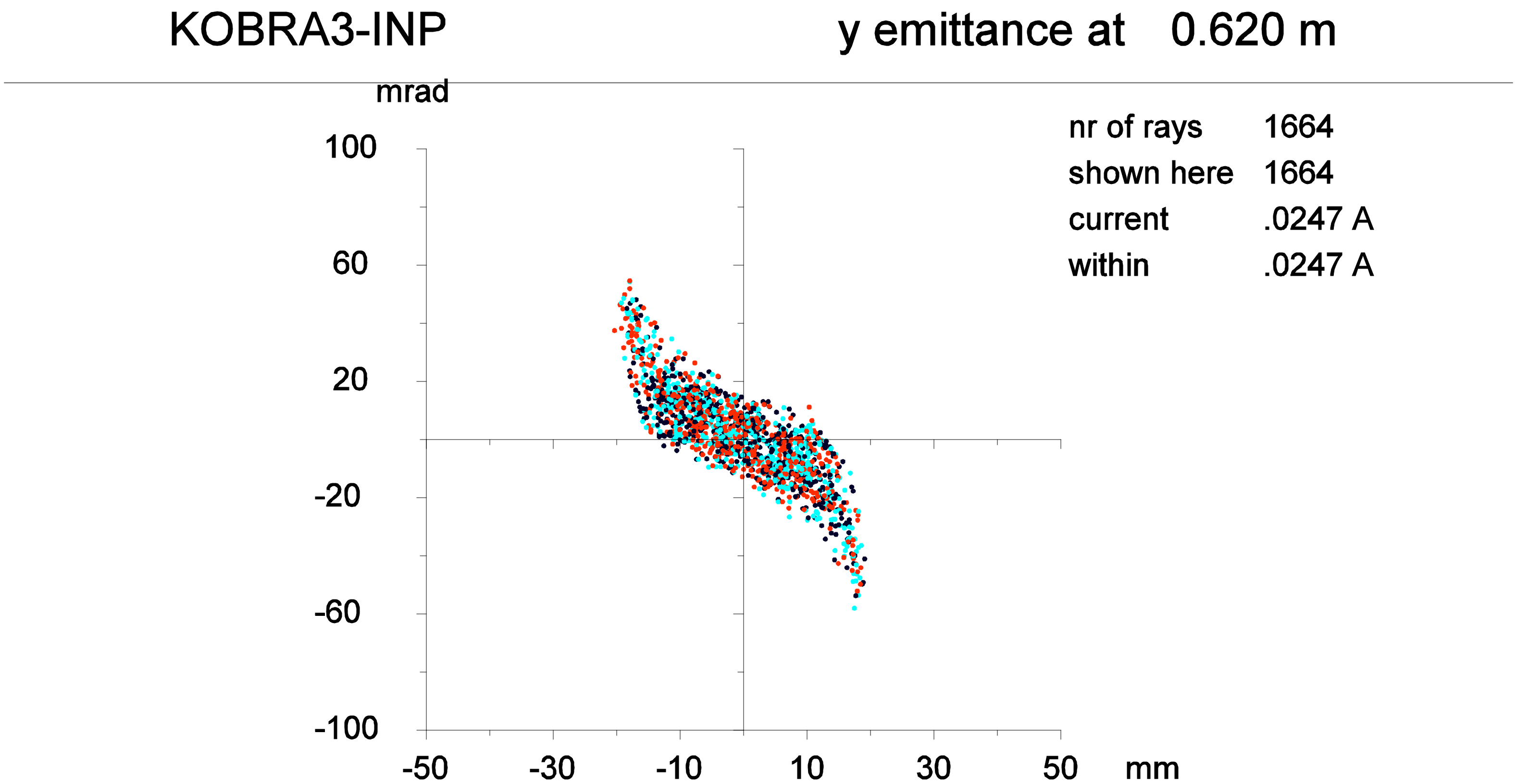
acceleration



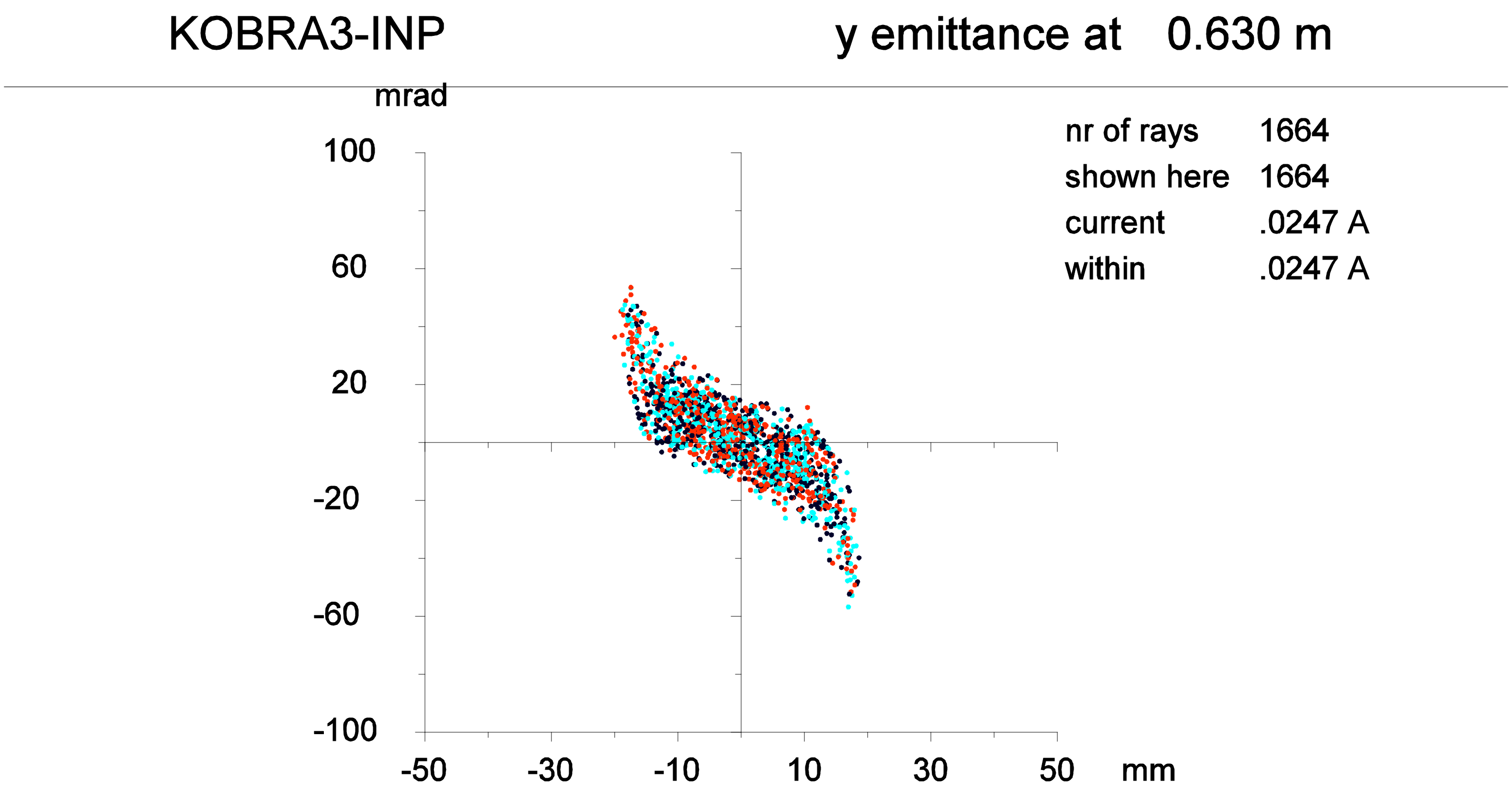
acceleration



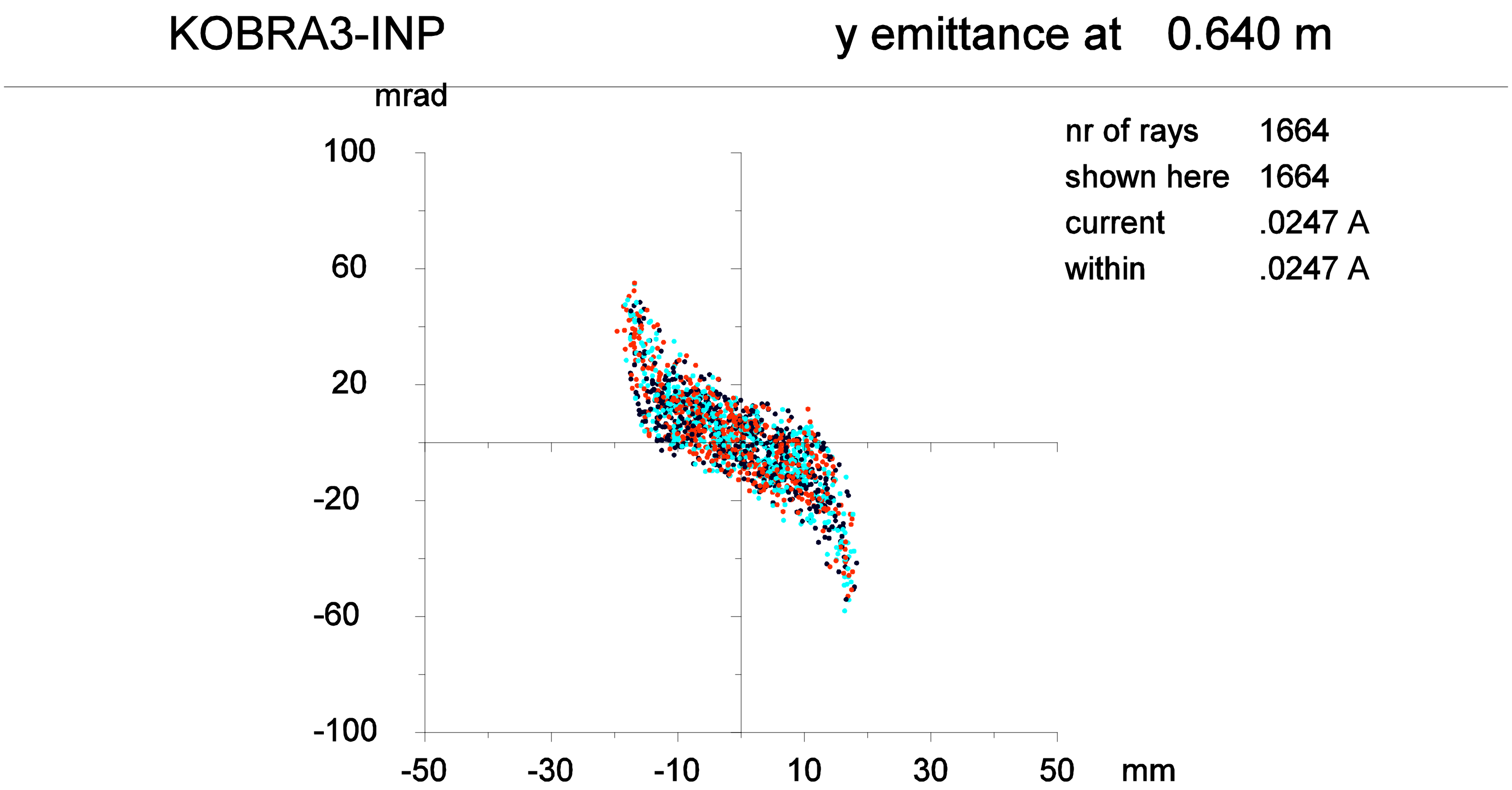
acceleration



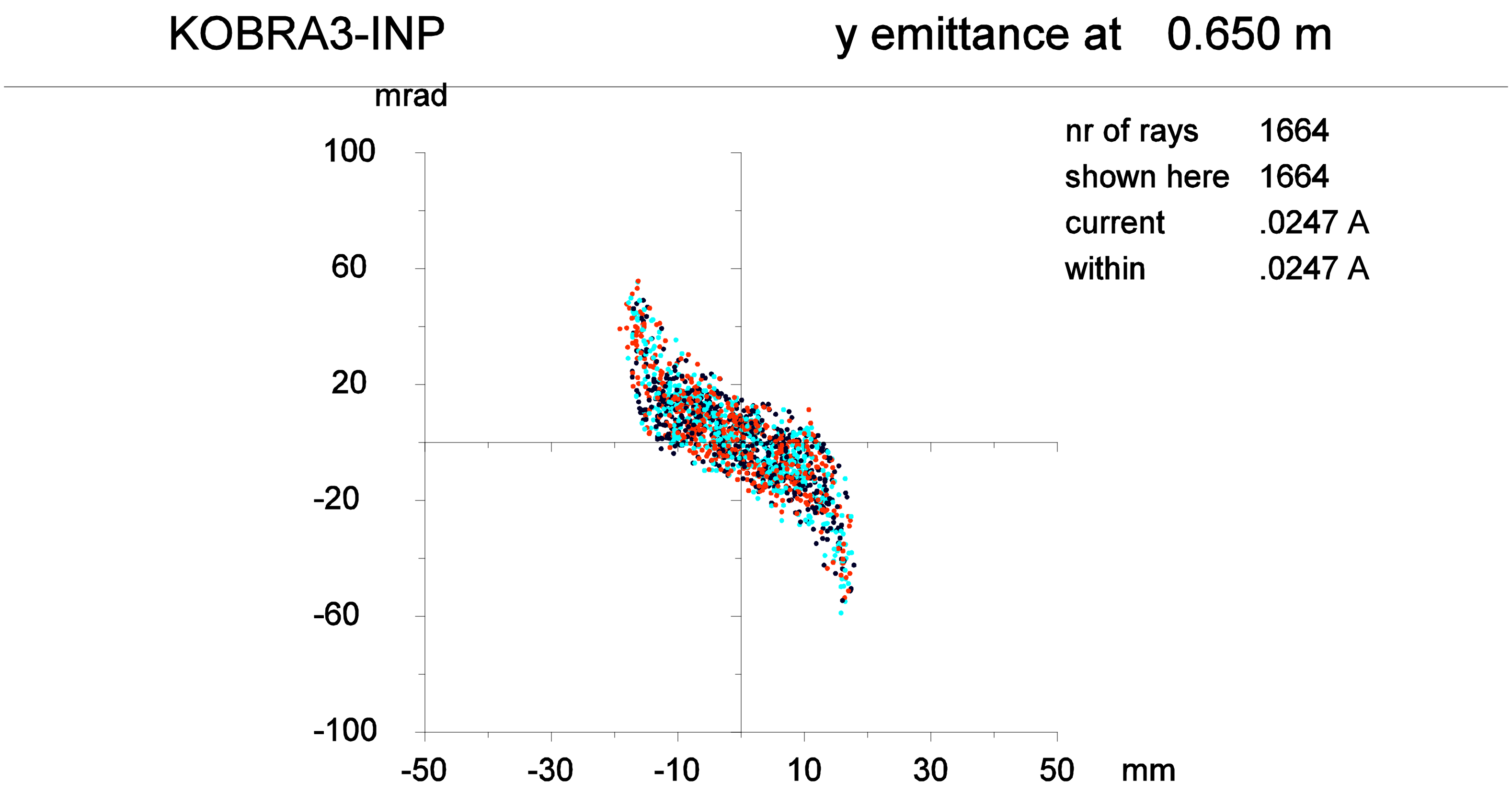
acceleration



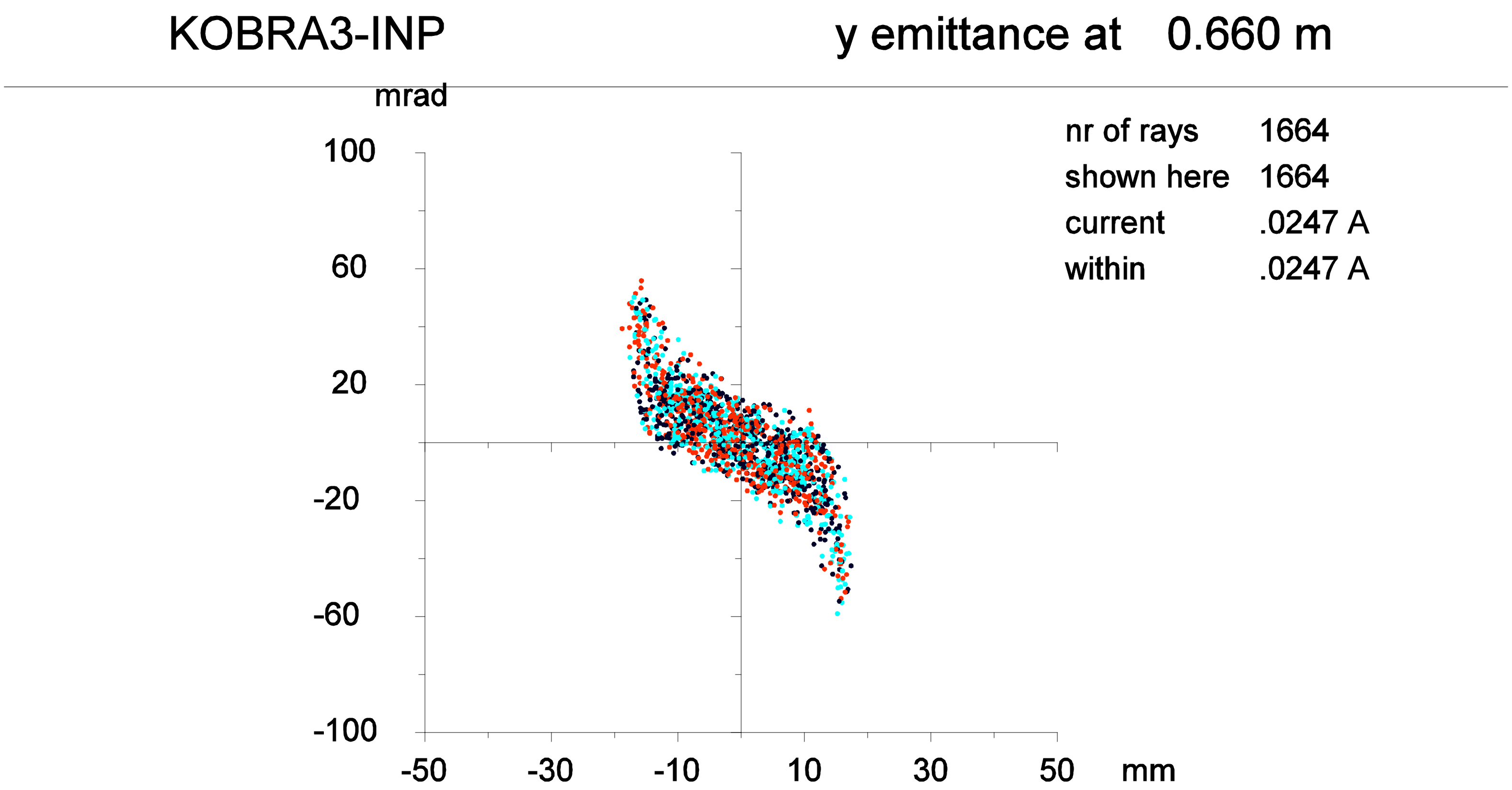
acceleration



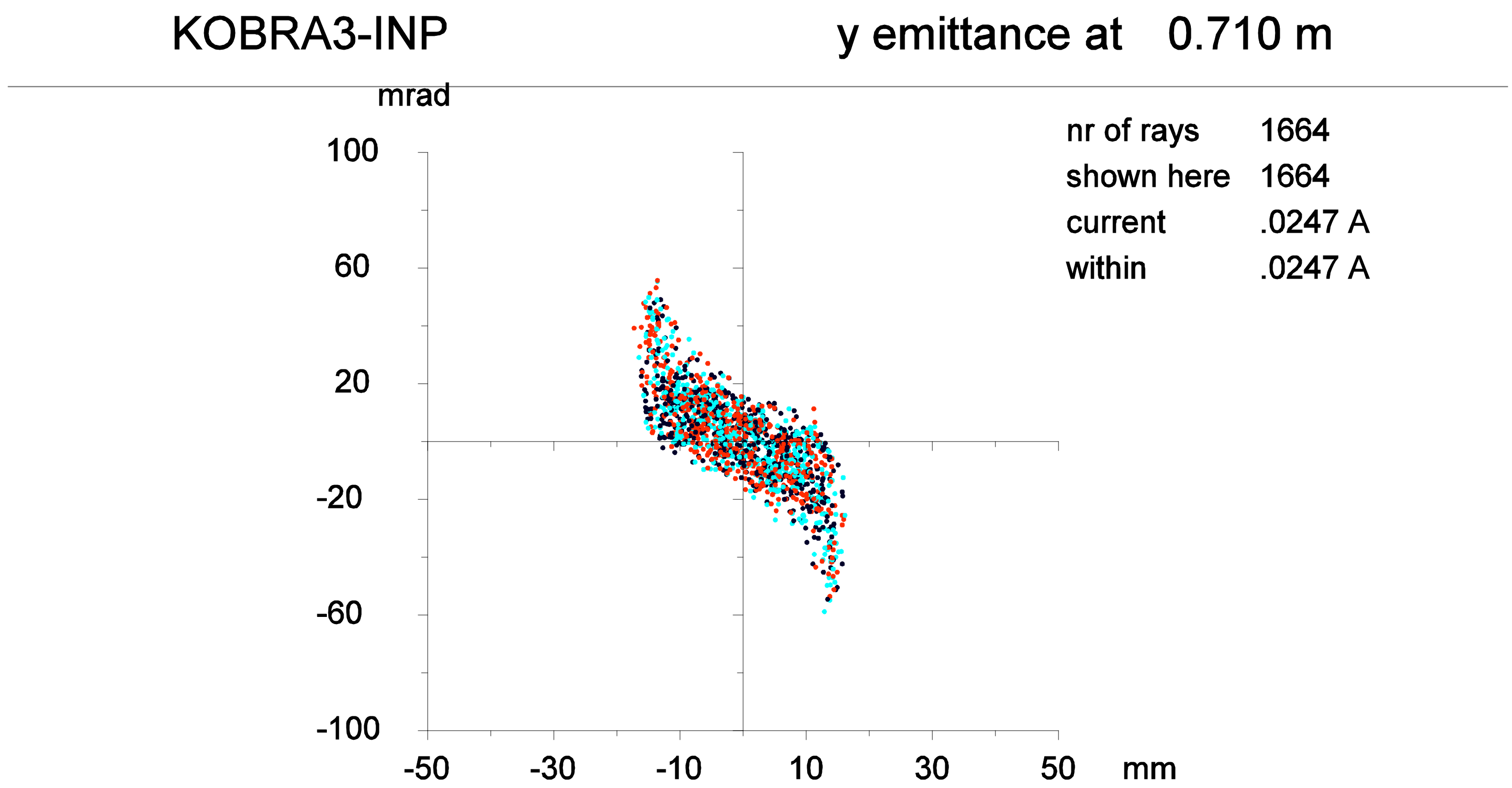
drift


KOBRA3-INP
y emittance at 0.650 m
mrad
100
60
20
-20
-60
-100
-50
-30
-10
10
30
50
mm
nr of rays 1664
shown here 1664
current .0247 A
within .0247 A

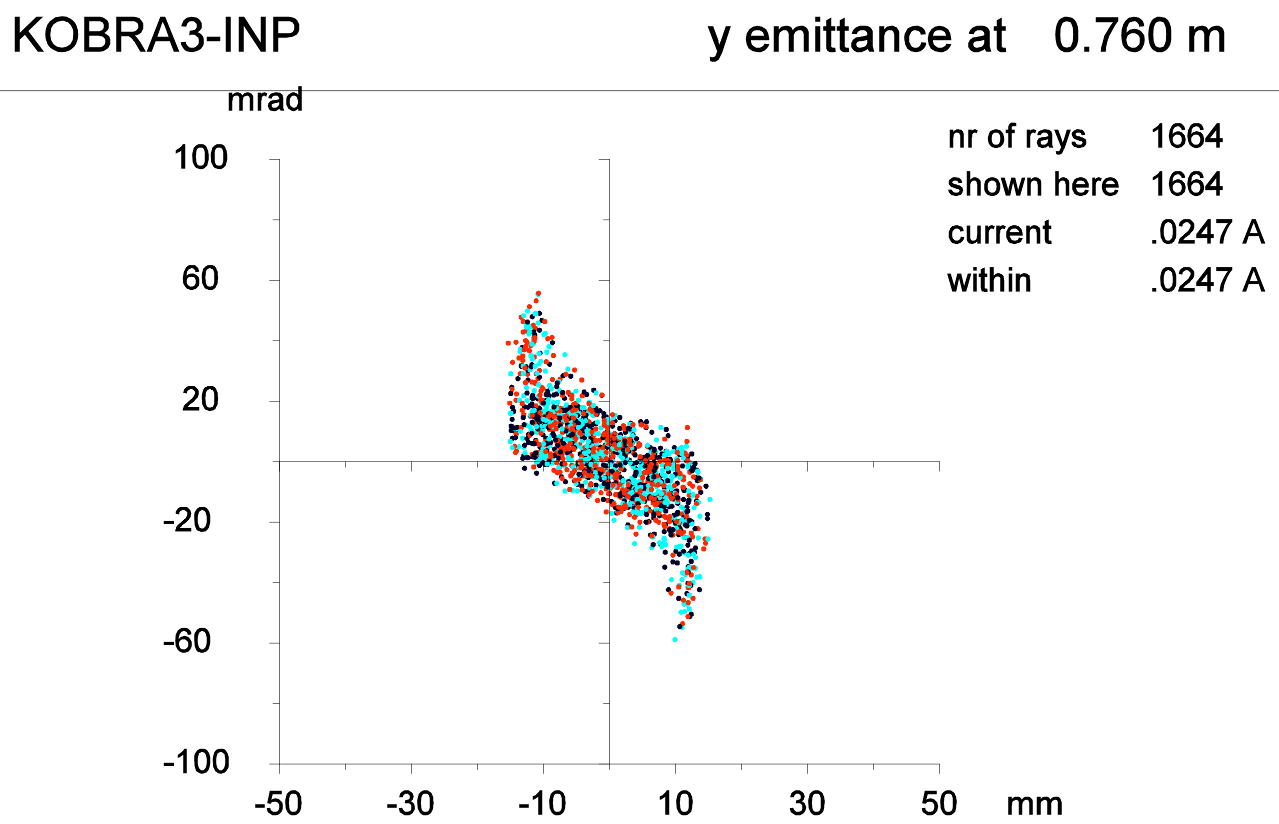
drift


KOBRA3-INP
y emittance at 0.660 m
mrad
100
60
20
-20
-60
-100
-50
-30
-10
10
30
50
mm
nr of rays 1664
shown here 1664
current .0247 A
within .0247 A

drift


KOBRA3-INP
y emittance at 0.710 m
mrad
nr of rays 1664
shown here 1664
current .0247 A
within .0247 A
100
60
20
-20
-60
-100
-50
-30
-10
10
30
50
mm

drift


KOBRA3-INP
y emittance at 0.760 m
mrad
100
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-20
-60
-100
-50
-30
-10
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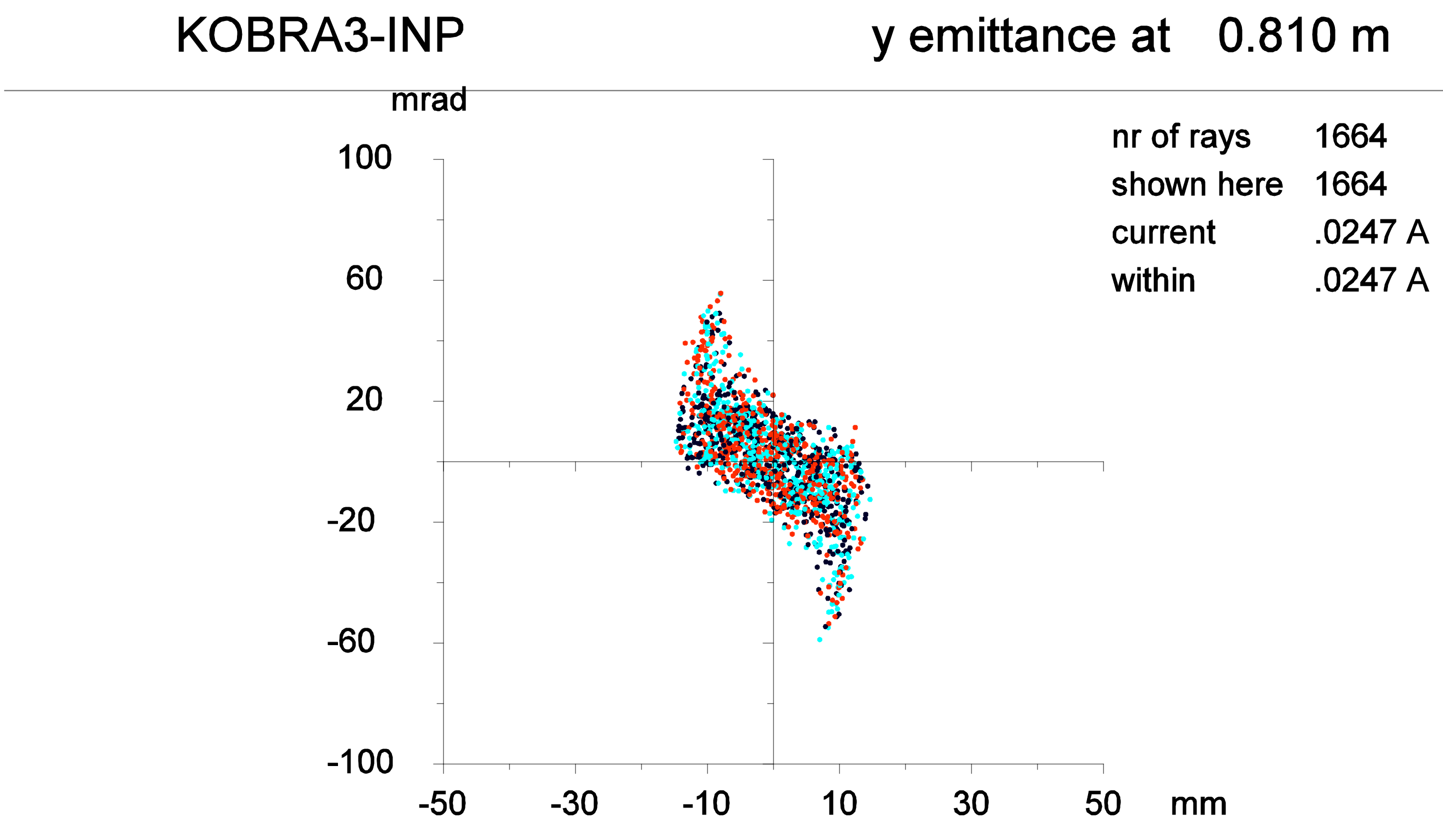
30
50
mm
nr of rays 1664
shown here 1664
current .0247 A
within .0247 A

drift


KOBRA3-INP
y emittance at 0.810 m
mrad
100
60
20
-20
-60
-100
-50
-30
-10
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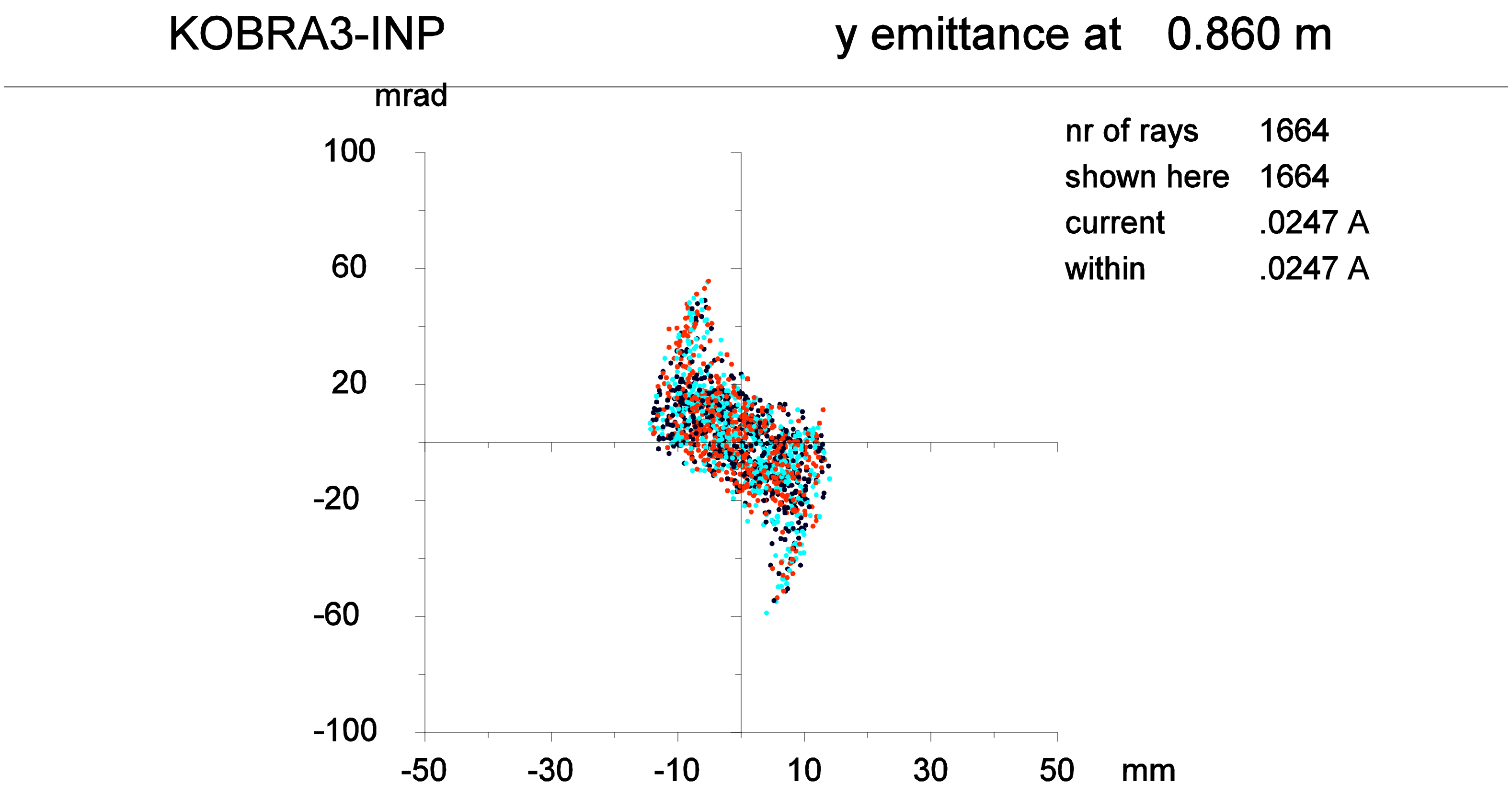
30
50
mm
nr of rays 1664
shown here 1664
current .0247 A
within .0247 A

drift


KOBRA3-INP
y emittance at 0.860 m
mrad
100
60
20
-20
-60
-100
-50
-30
-10
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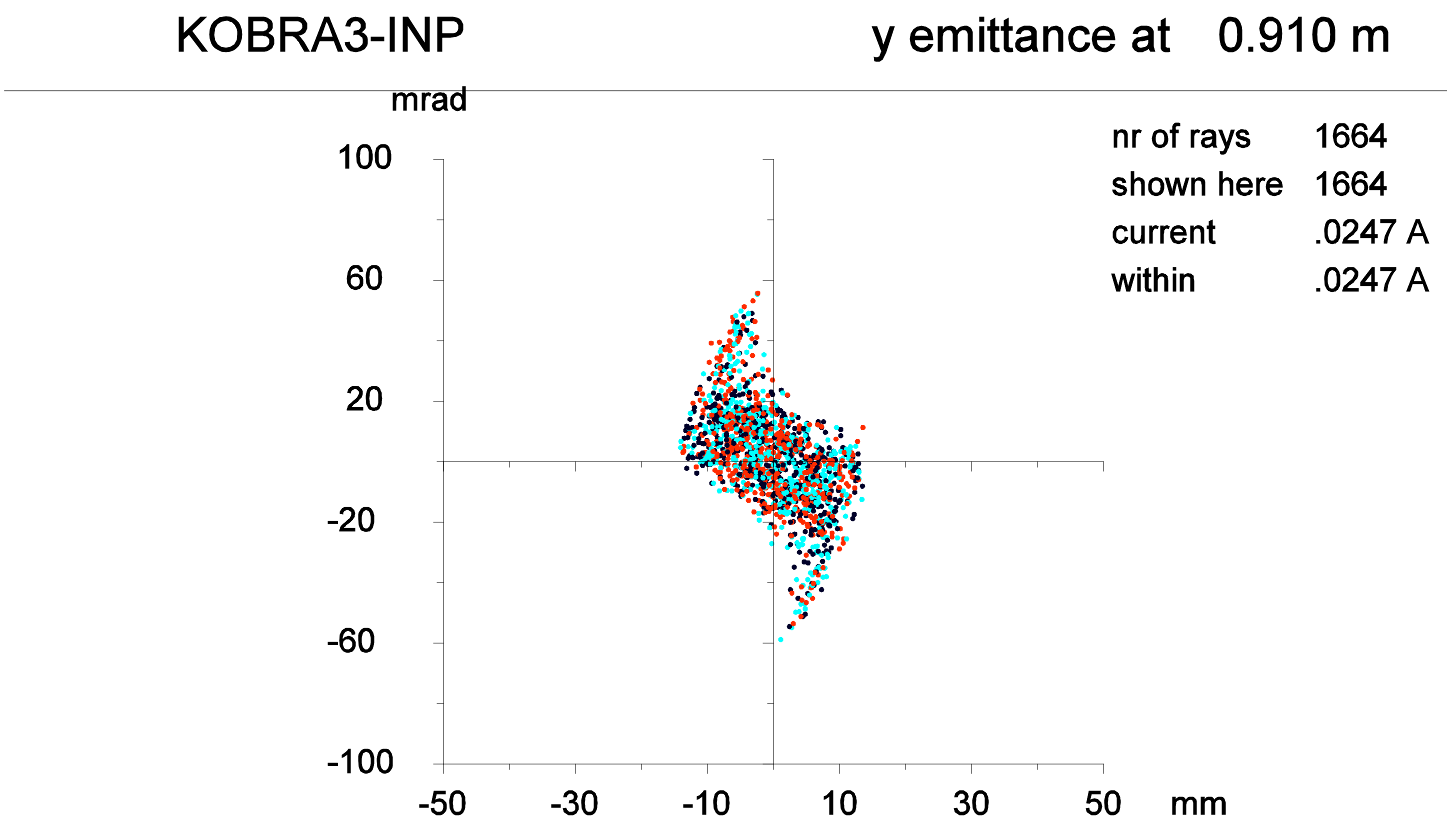
30
50
mm
nr of rays 1664
shown here 1664
current .0247 A
within .0247 A

drift


KOBRA3-INP
y emittance at 0.910 m
mrad
100
60
20
-20
-60
-100
-50
-30
-10
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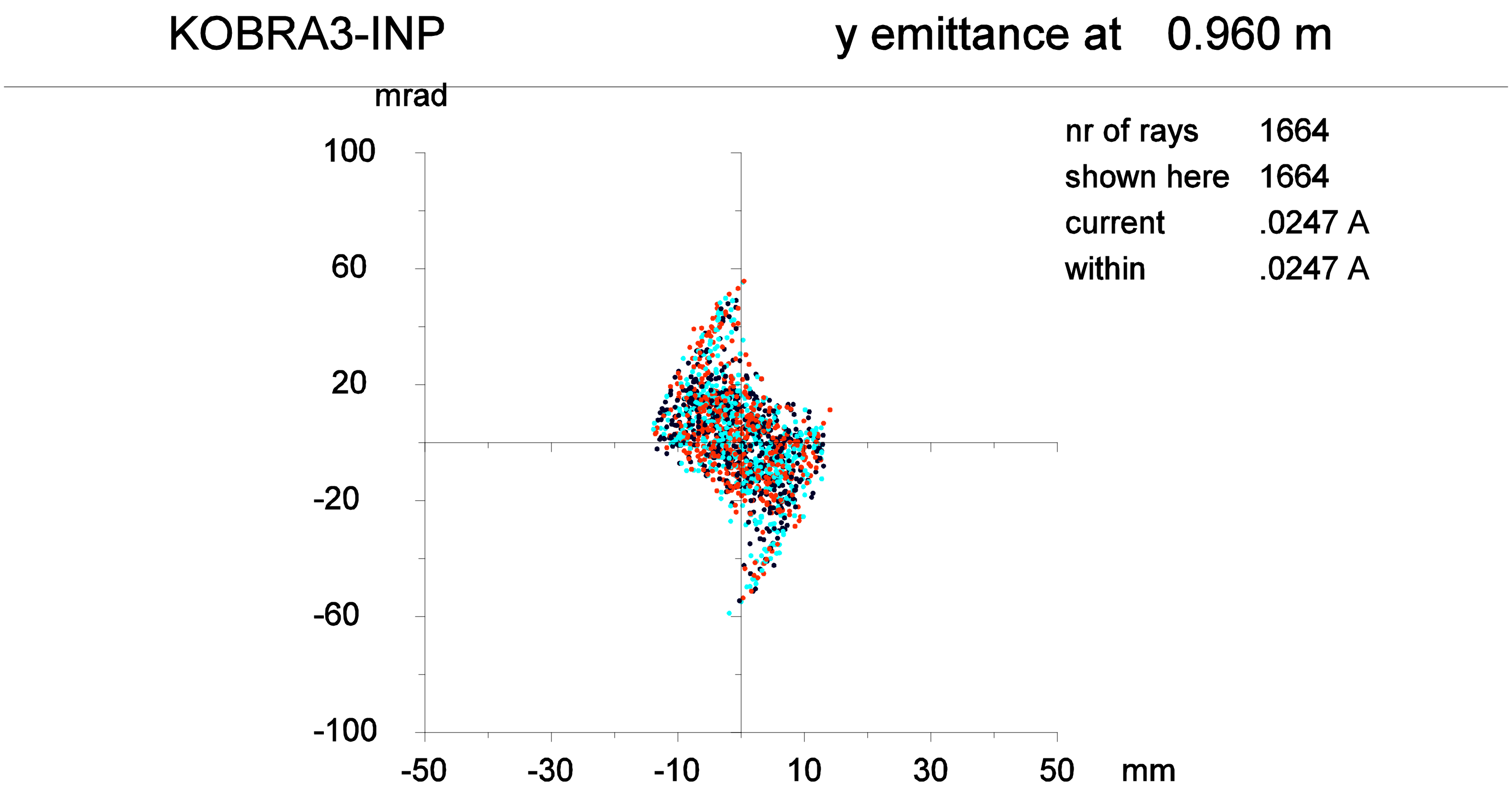
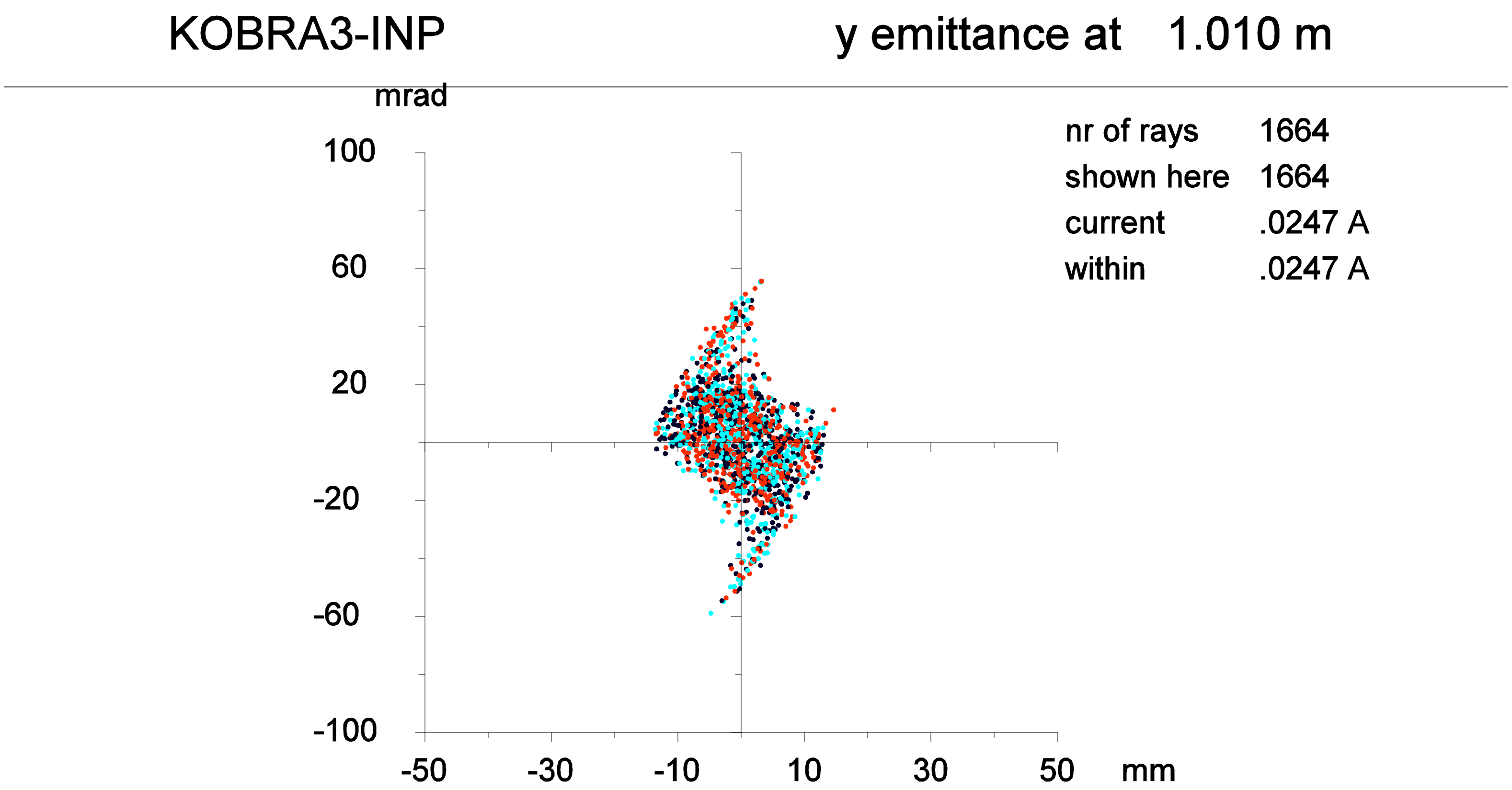
30
50
mm
nr of rays 1664
shown here 1664
current .0247 A
within .0247 A

drift


KOBRA3-INP
y emittance at 0.960 m
mrad
100
60
20
-20
-60
-100
-50
-30
-10
10
30
50
mm
nr of rays 1664
shown here 1664
current .0247 A
within .0247 A

drift


KOBRA3-INP
y emittance at 1.010 m
mrad
100
60
20
-20
-60
-100
-50
-30
-10
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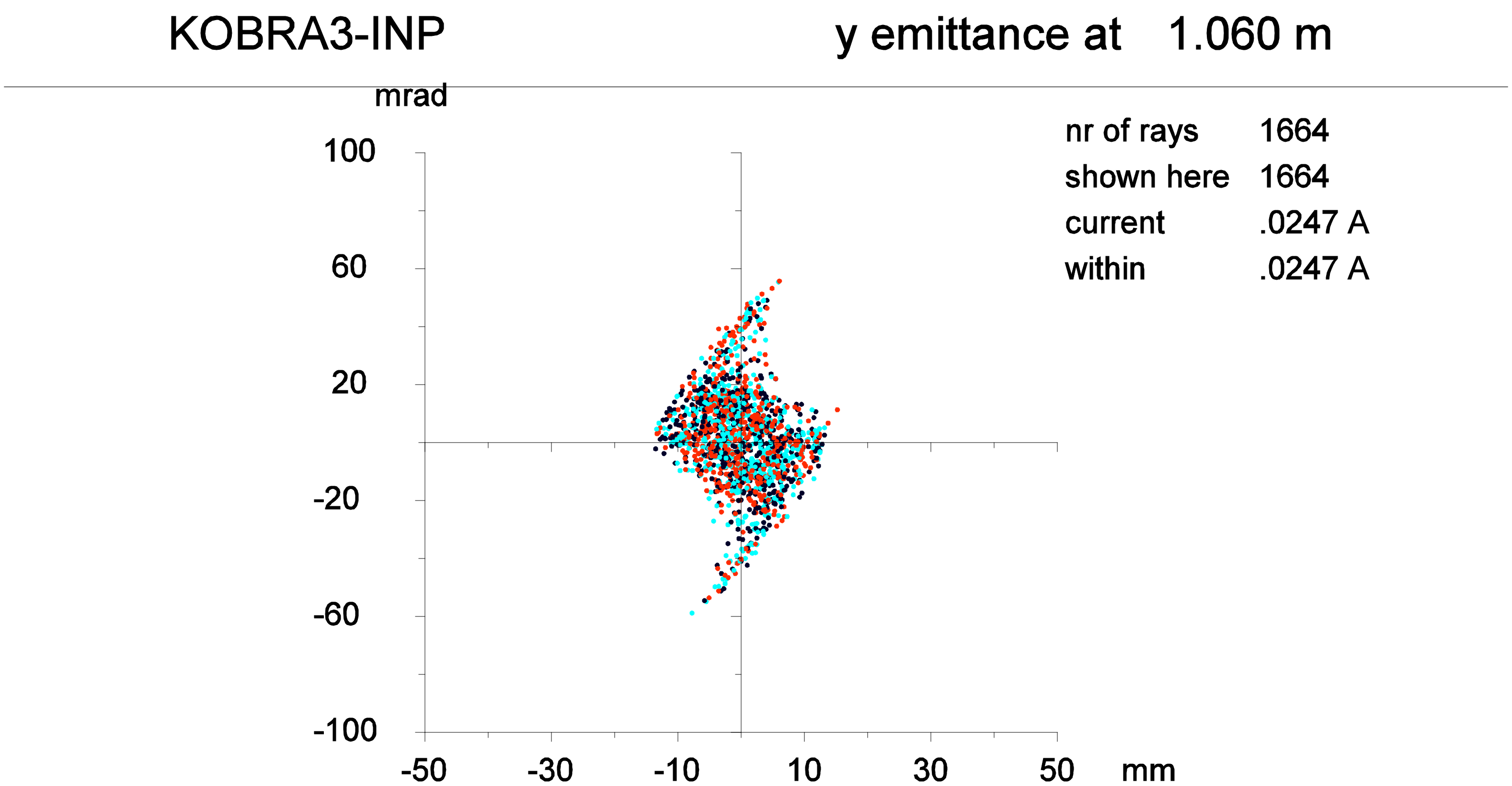
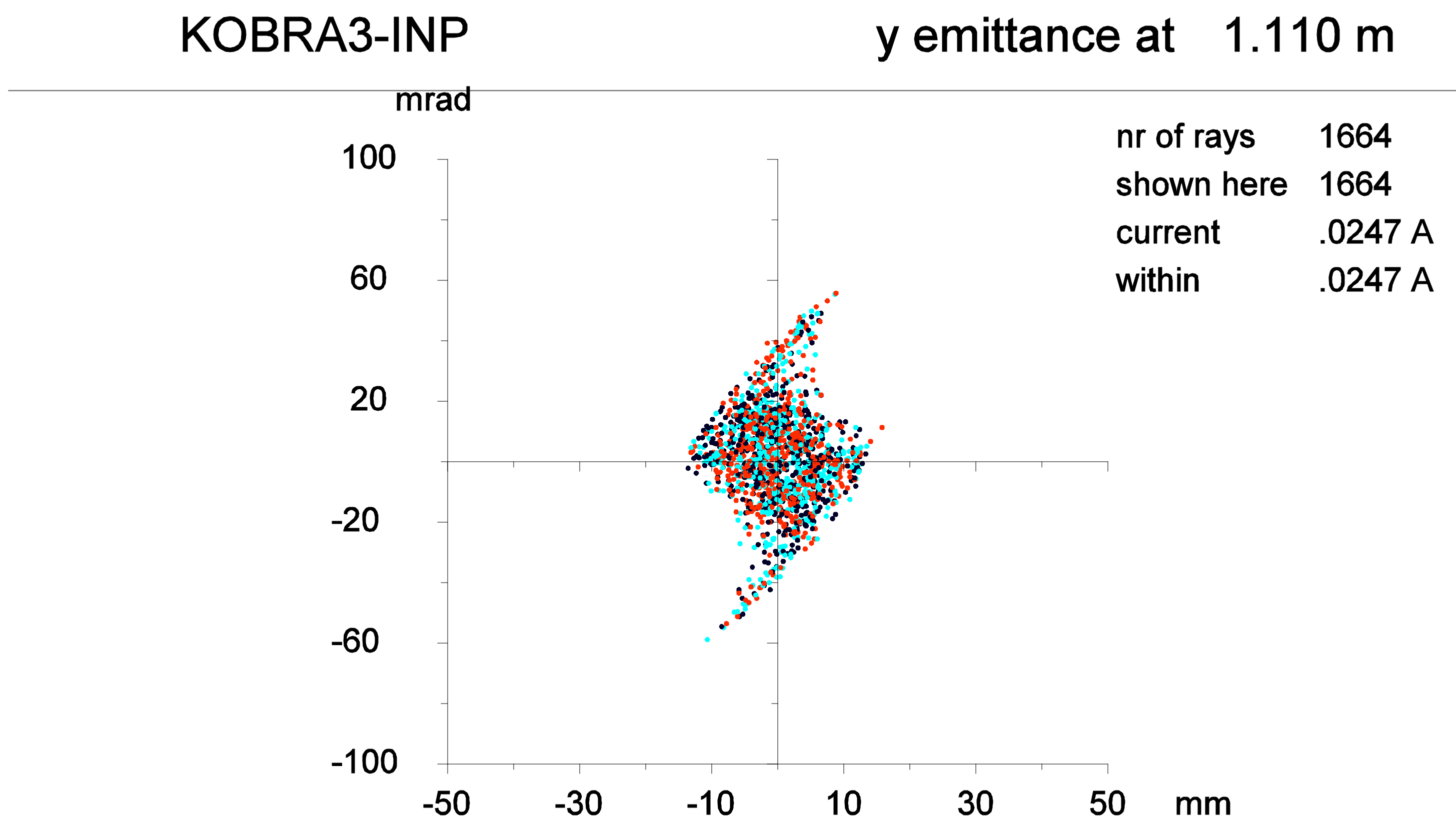
30
50
mm
nr of rays 1664
shown here 1664
current .0247 A
within .0247 A

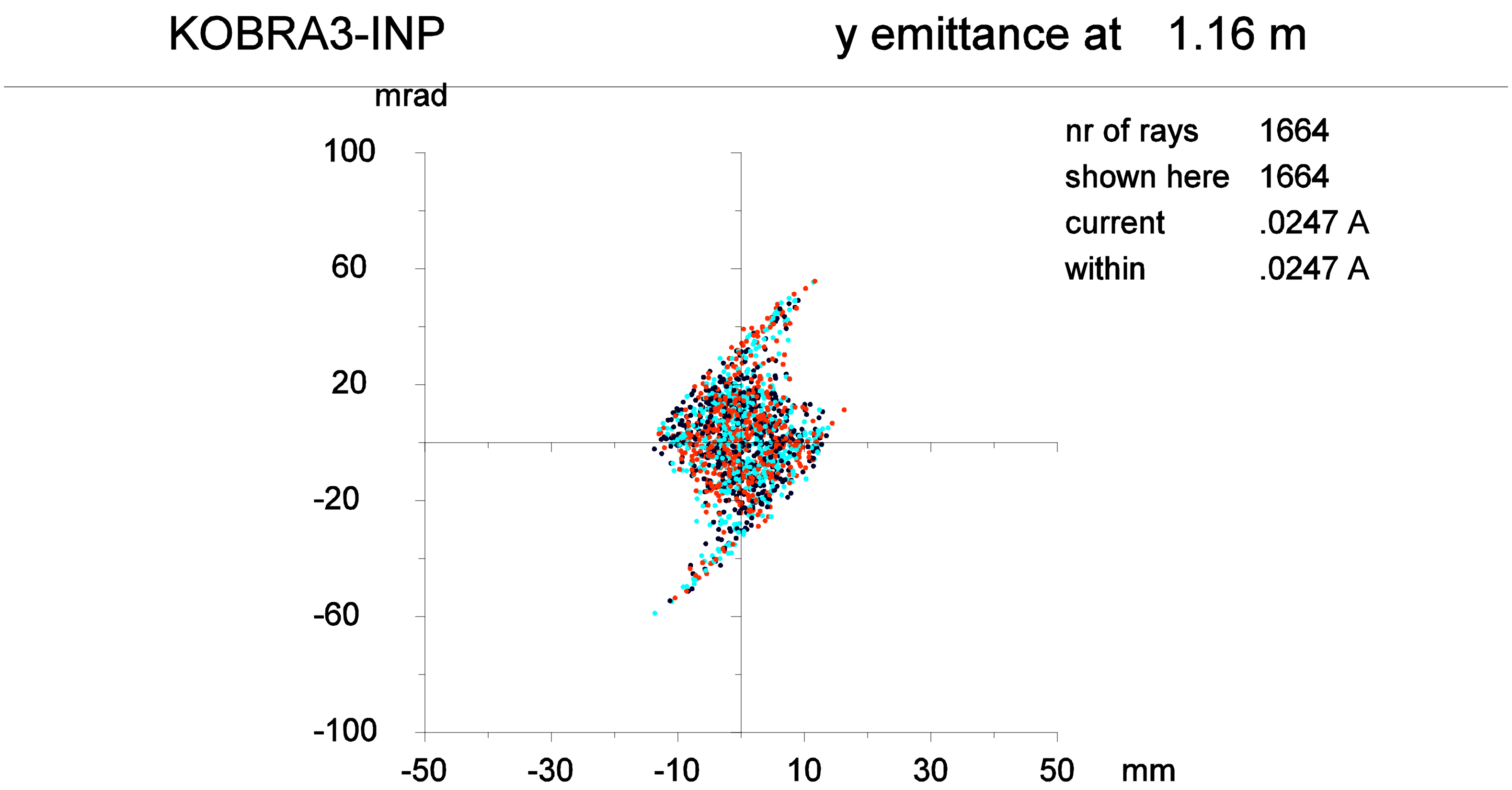
drift


KOBRA3-INP
y emittance at 1.060 m
mrad
nr of rays 1664
shown here 1664
current .0247 A
within .0247 A
100
60
20
-20
-60
-100
-50
-30
-10
10
30
50
mm

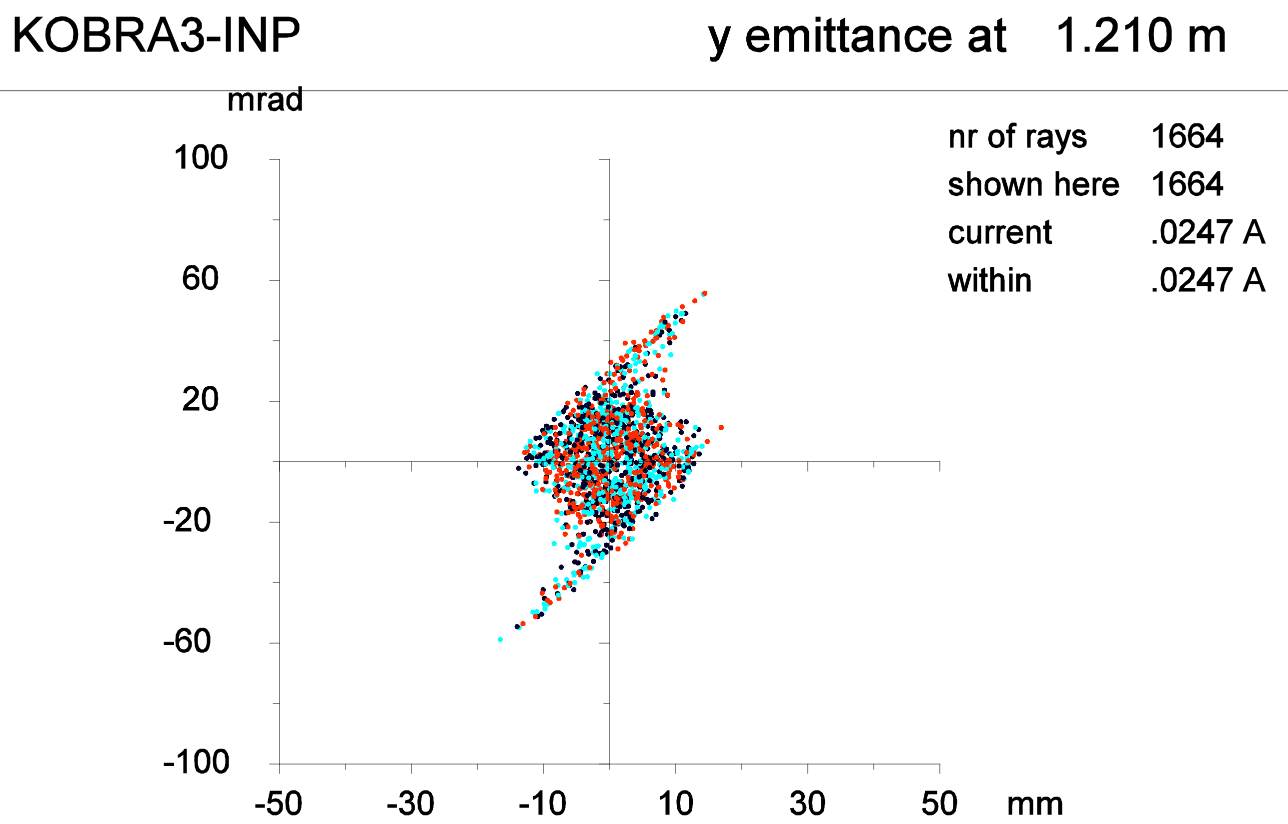
drift


KOBRA3-INP
y emittance at 1.110 m
mrad
100
60
20
-20
-60
-100
-50
-30
-10
10
30
50
mm
nr of rays 1664
shown here 1664
current .0247 A
within .0247 A

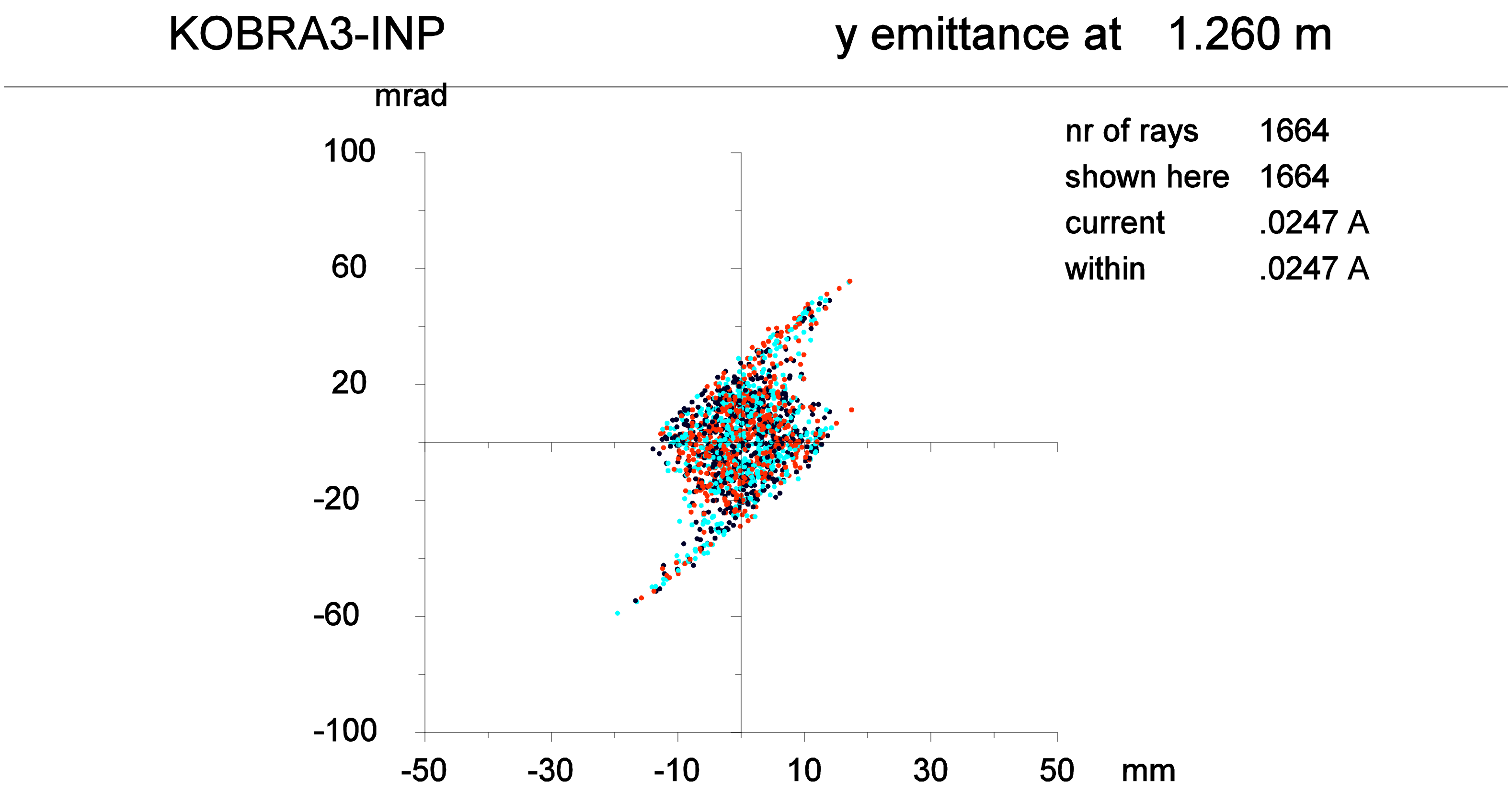
drift


KOBRA3-INP
y emittance at 1.16 m
mrad
100
60
20
-20
-60
-100
-50
-30
-10
10
30
50
mm
nr of rays 1664
shown here 1664
current .0247 A
within .0247 A

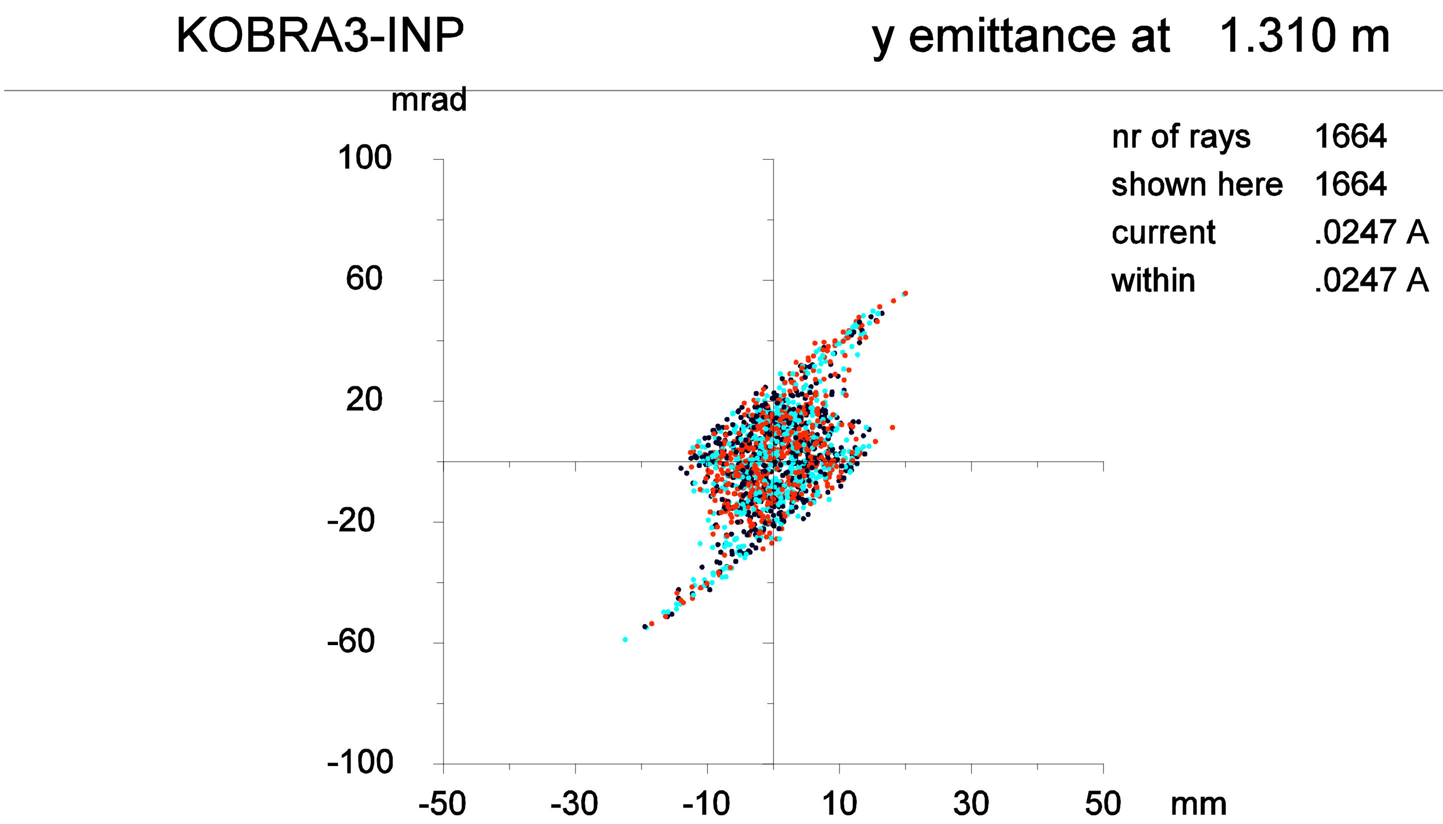
drift


KOBRA3-INP
y emittance at 1.210 m
mrad
100
60
20
-20
-60
-100
-50
-30
-10
10
30
50
mm
nr of rays 1664
shown here 1664
current .0247 A
within .0247 A

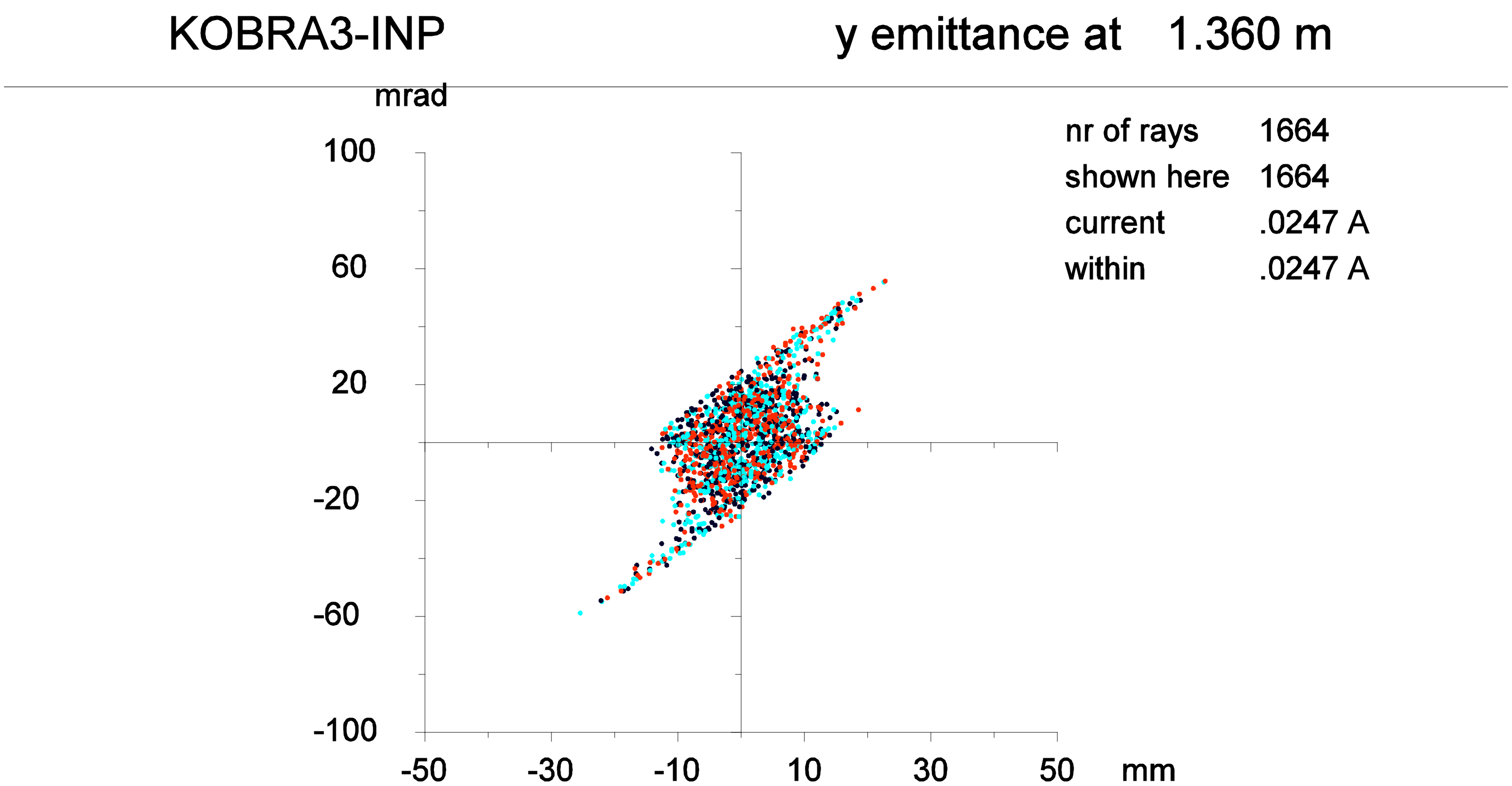
drift


KOBRA3-INP
y emittance at 1.260 m
mrad
100
60
20
-20
-60
-100
-50
-30
-10
10
30
50
mm
nr of rays 1664
shown here 1664
current .0247 A
within .0247 A

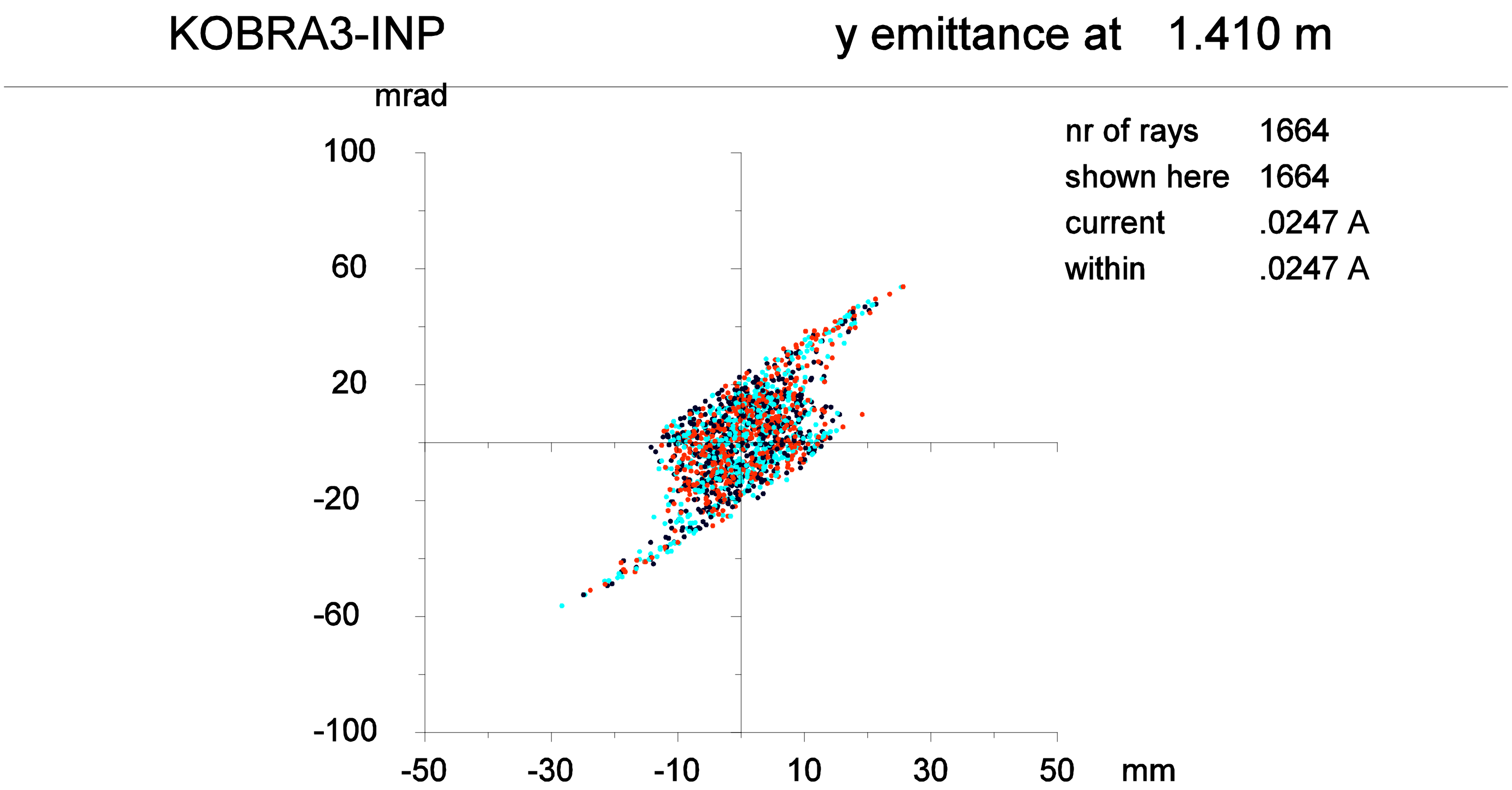
drift


KOBRA3-INP
y emittance at 1.310 m
mrad
100
60
20
-20
-60
-100
-50
-30
-10
10
30
50
mm
nr of rays 1664
shown here 1664
current .0247 A
within .0247 A

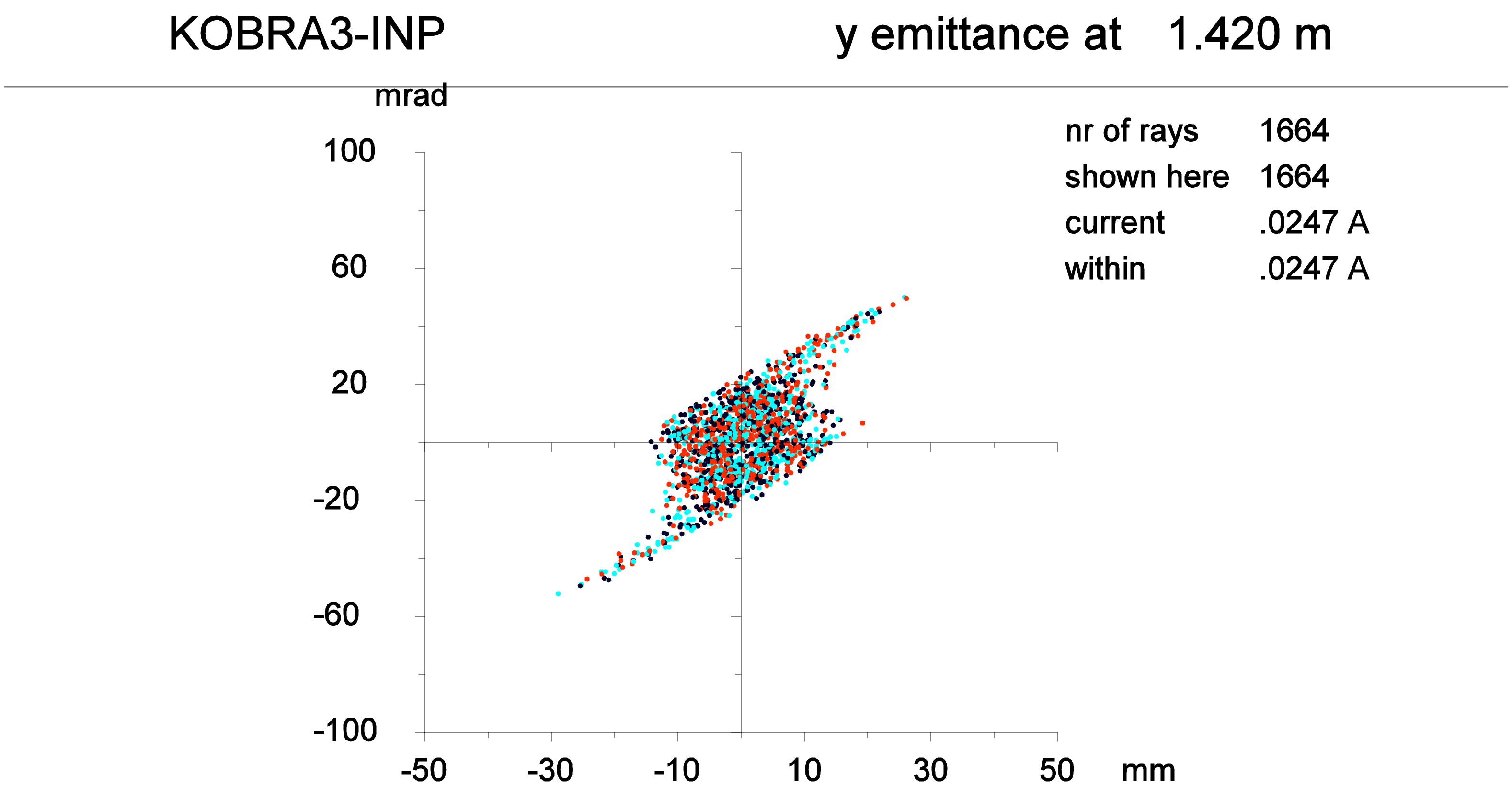
drift


KOBRA3-INP
y emittance at 1.360 m
mrad
100
60
20
-20
-60
-100
-50
-30
-10
10
30
50
mm
nr of rays 1664
shown here 1664
current .0247 A
within .0247 A

drift

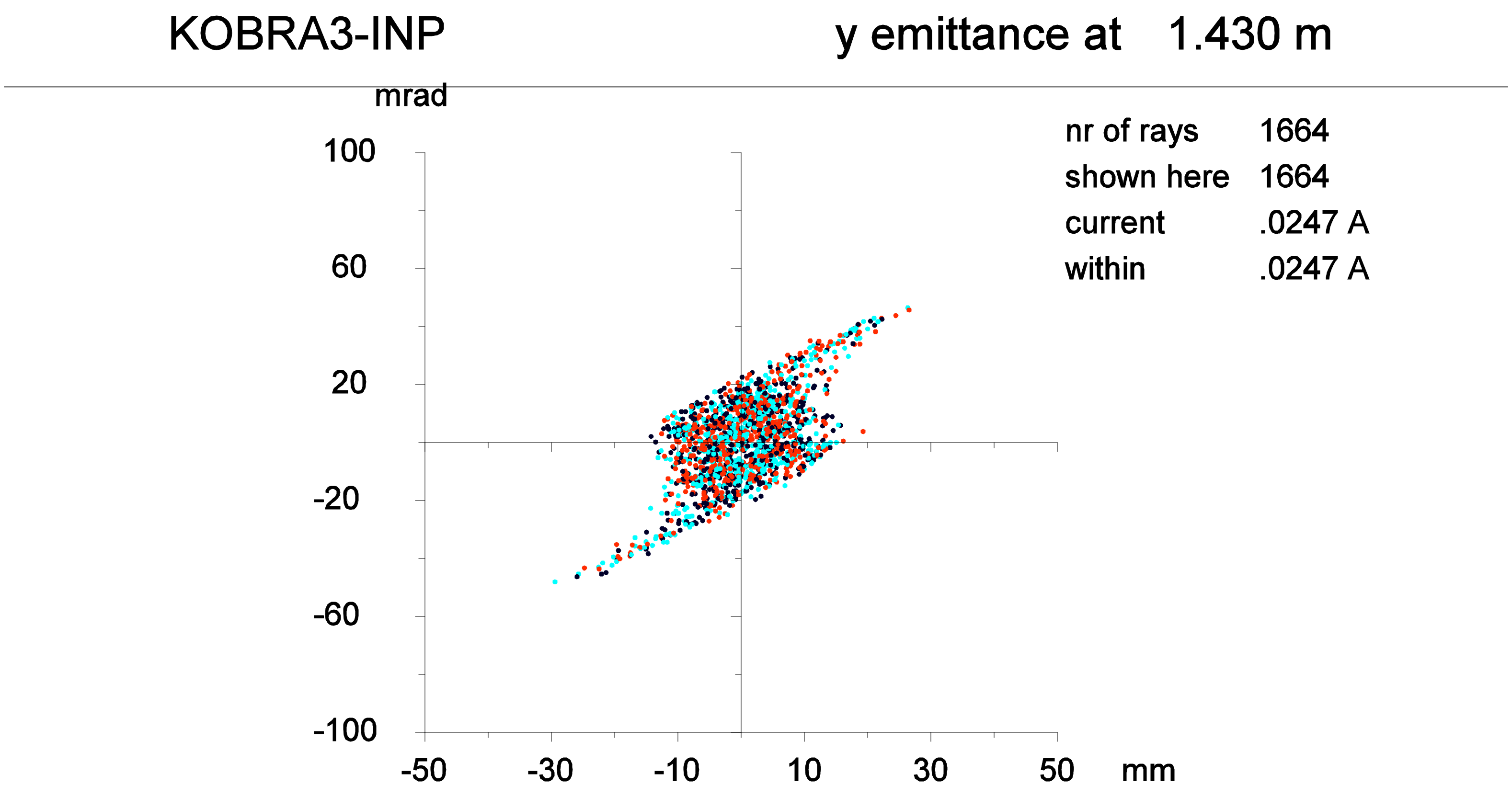

KOBRA3-INP
y emittance at 1.410 m
mrad
100
60
20
-20
-60
-100
-50
-30
-10
10
30
50
mm
nr of rays 1664
shown here 1664
current .0247 A
within .0247 A

quadrupole



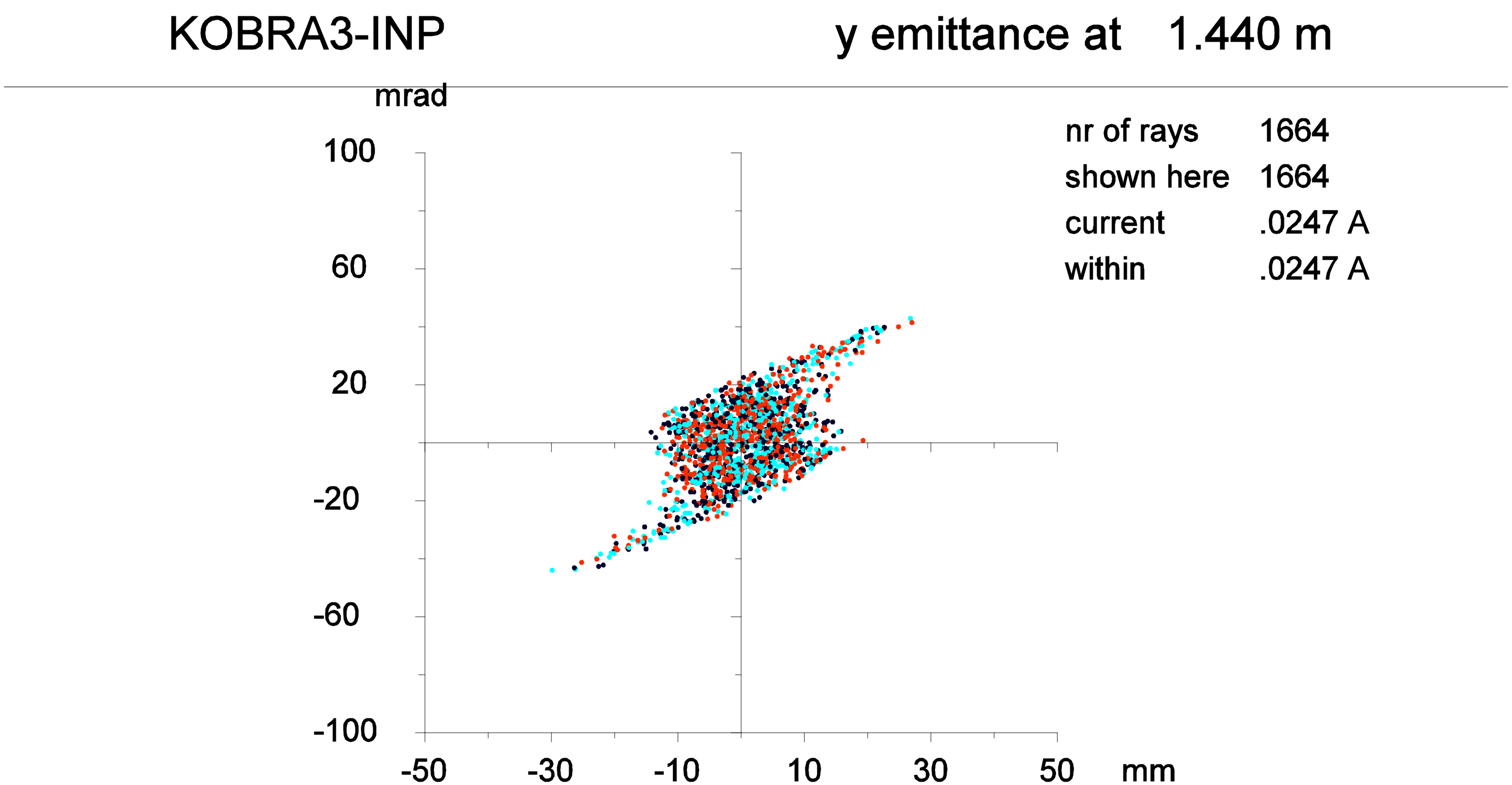
KOBRA3-INP
y emittance at 1.420 m
mrad
100
60
20
-20
-60
-100
-50
-30
-10
10
30
50
mm
nr of rays 1664
shown here 1664
current .0247 A
within .0247 A

quadrupole



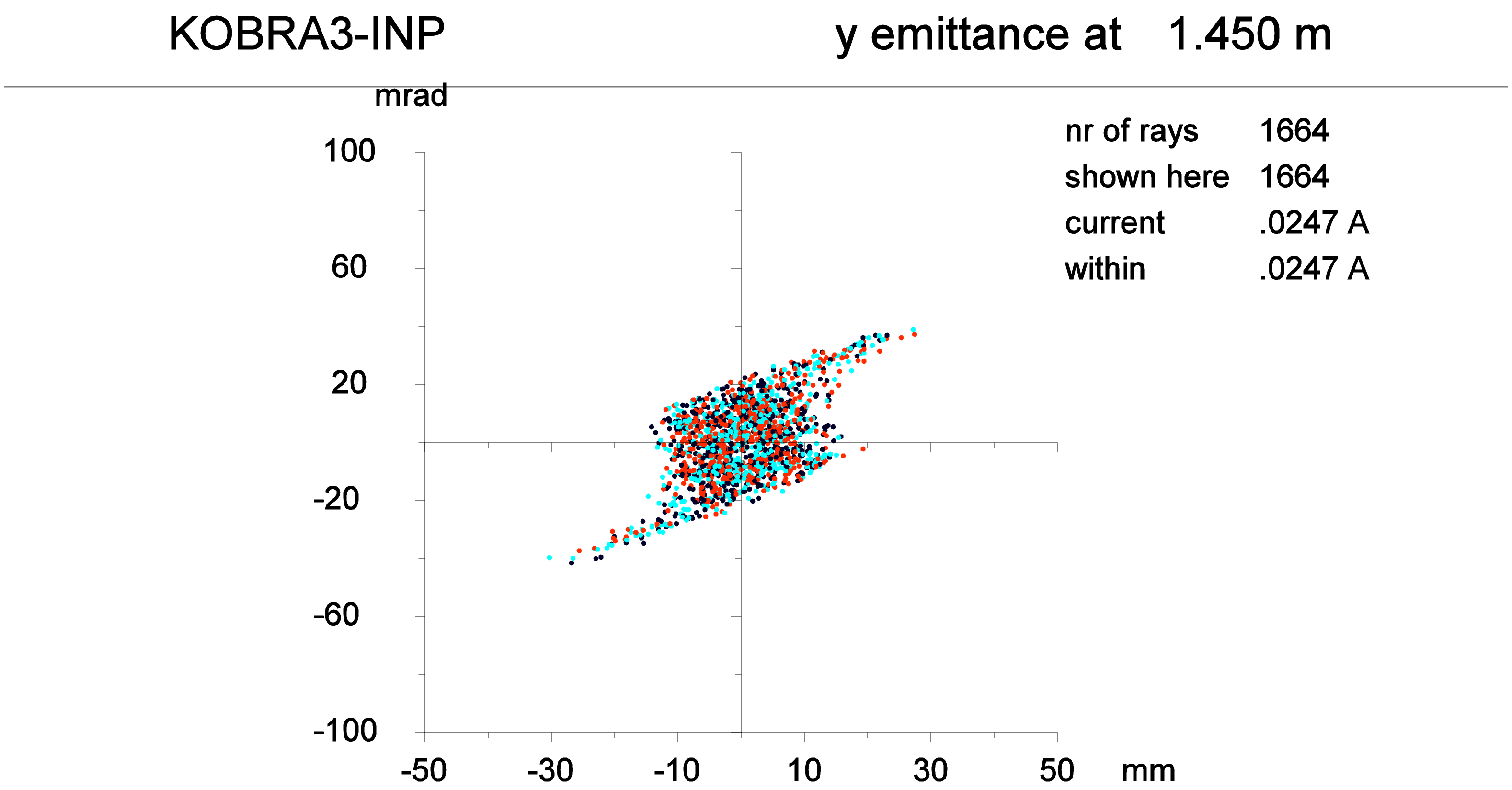
KOBRA3-INP
y emittance at 1.430 m
mrad
100
60
20
-20
-60
-100
-50
-30
-10
10
30
50
mm
nr of rays 1664
shown here 1664
current .0247 A
within .0247 A

quadrupole



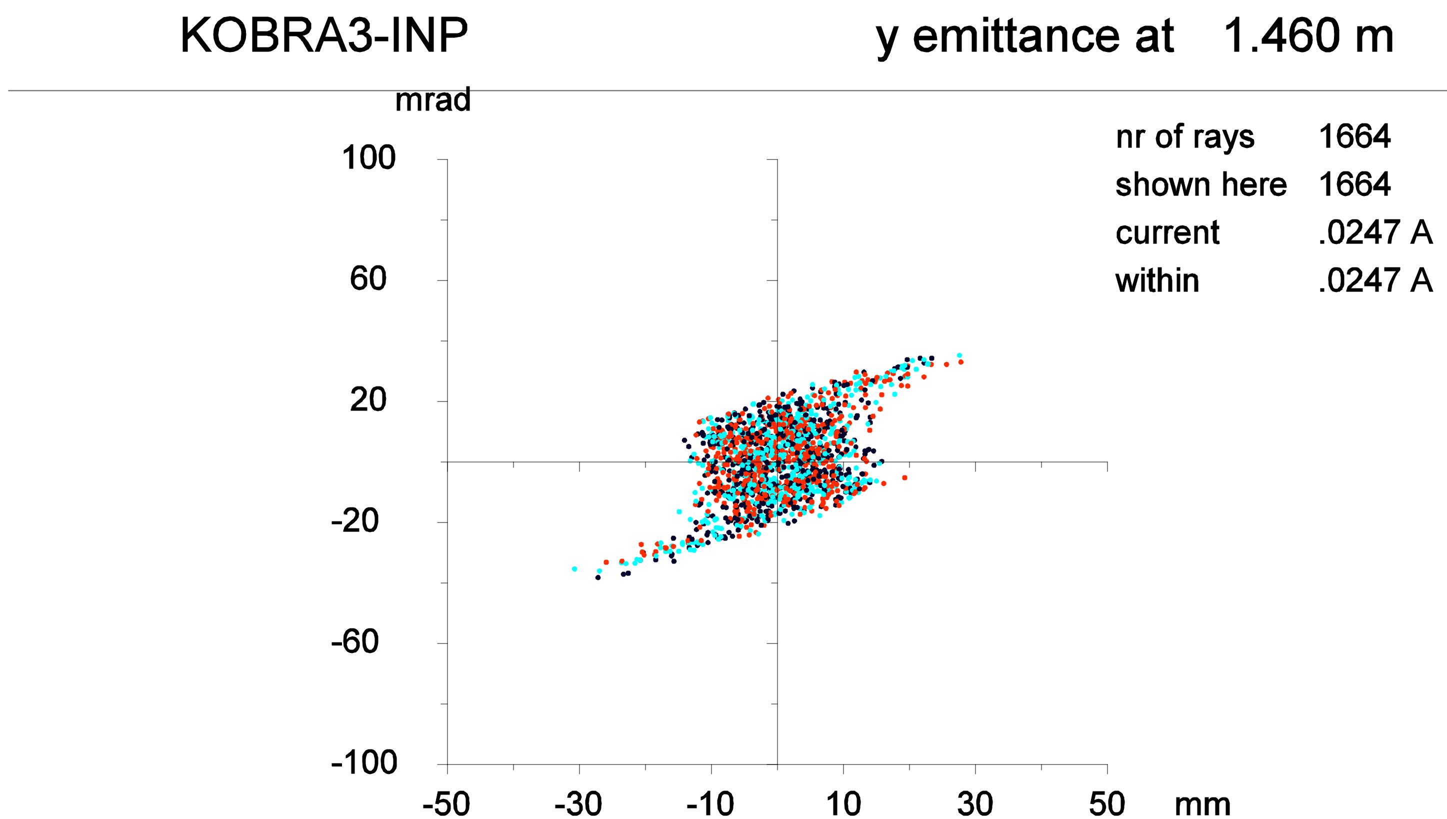
KOBRA3-INP
y emittance at 1.440 m
mrad
100
60
20
-20
-60
-100
-50
-30
-10
10
30
50
mm
nr of rays 1664
shown here 1664
current .0247 A
within .0247 A

quadrupole



KOBRA3-INP
y emittance at 1.450 m
mrad
100
60
20
-20
-60
-100
-50
-30
-10
10
30
50
mm
nr of rays 1664
shown here 1664
current .0247 A
within .0247 A

quadrupole


KOBRA3-INP
y emittance at 1.460 m
mrad
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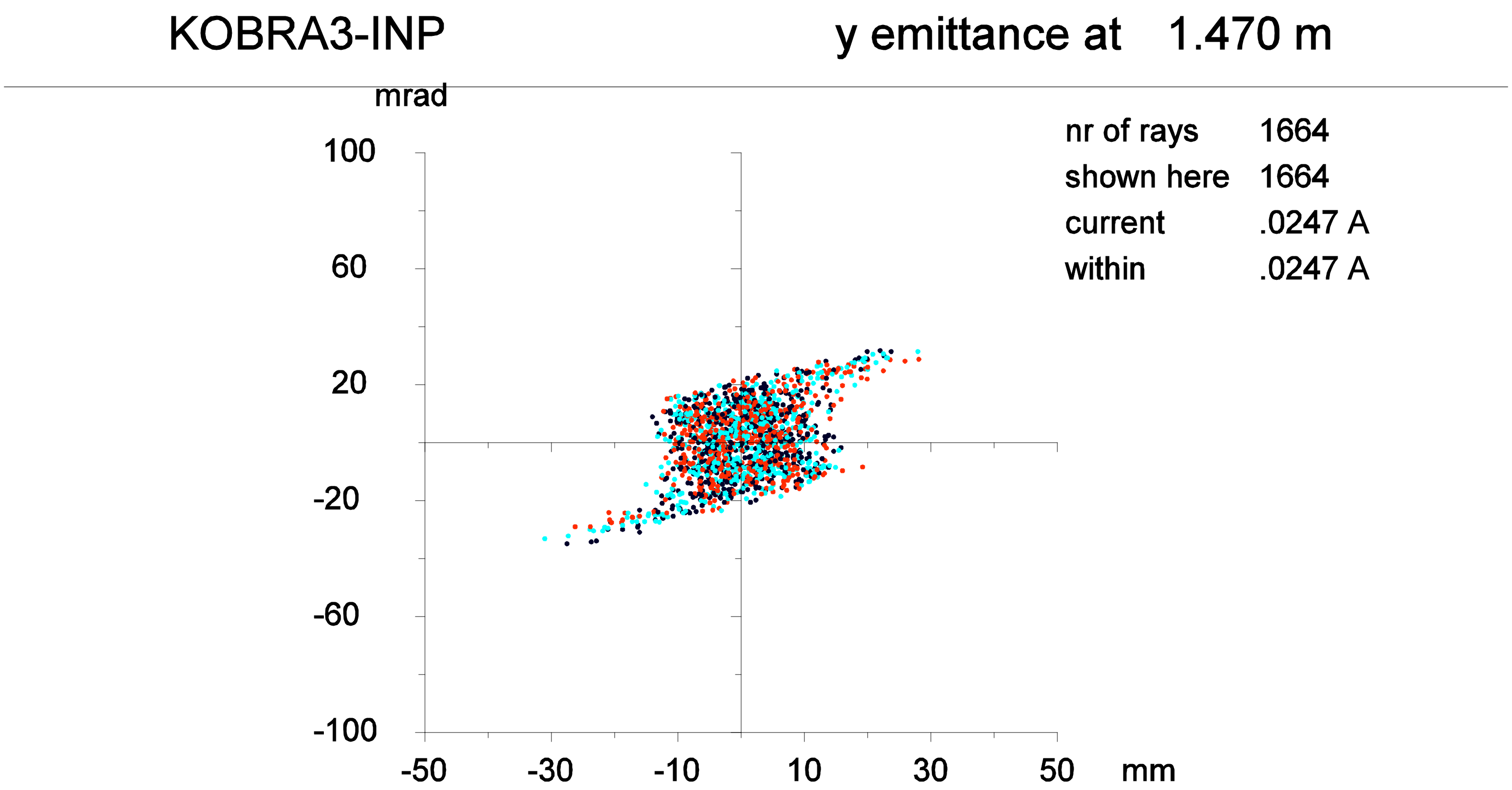
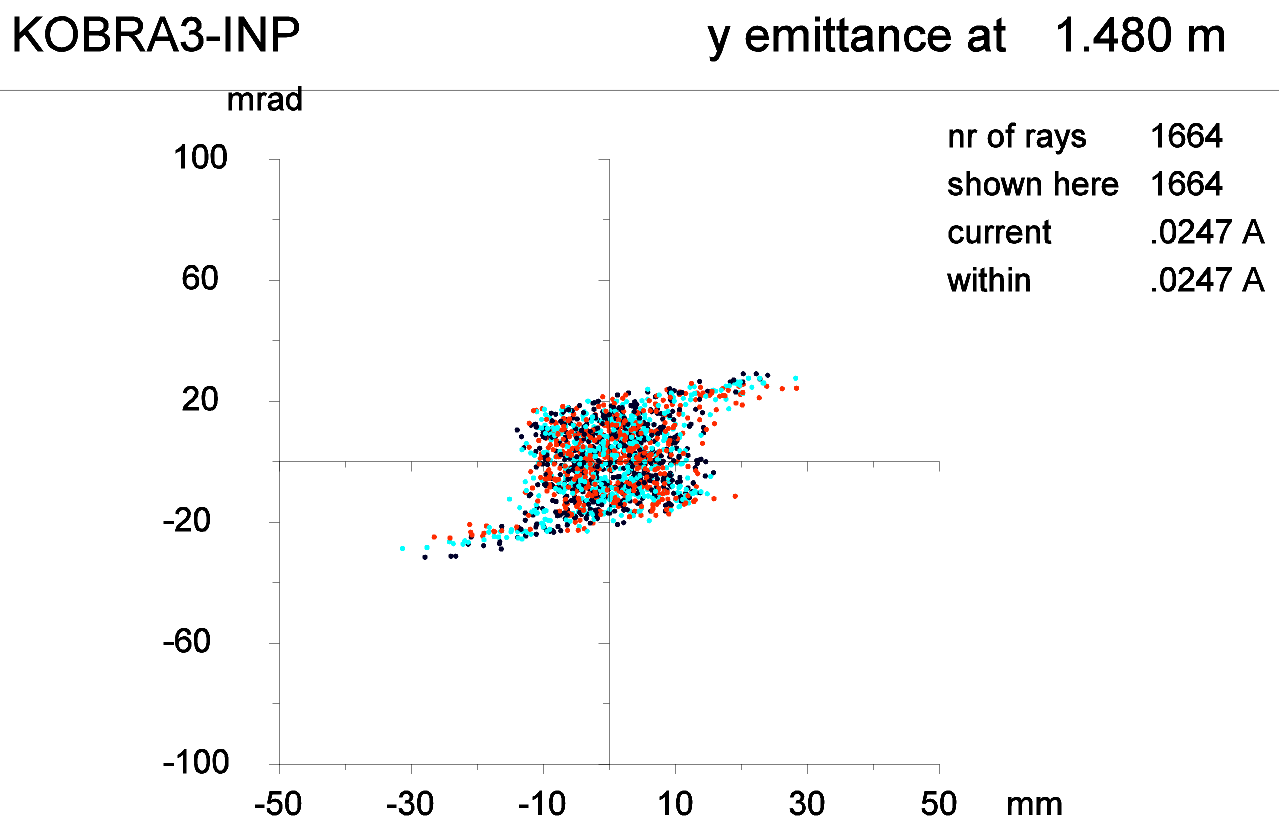
60
20
-20
-60
-100
-50
-30
-10
10
30
50
mm
nr of rays 1664
shown here 1664
current .0247 A
within .0247 A

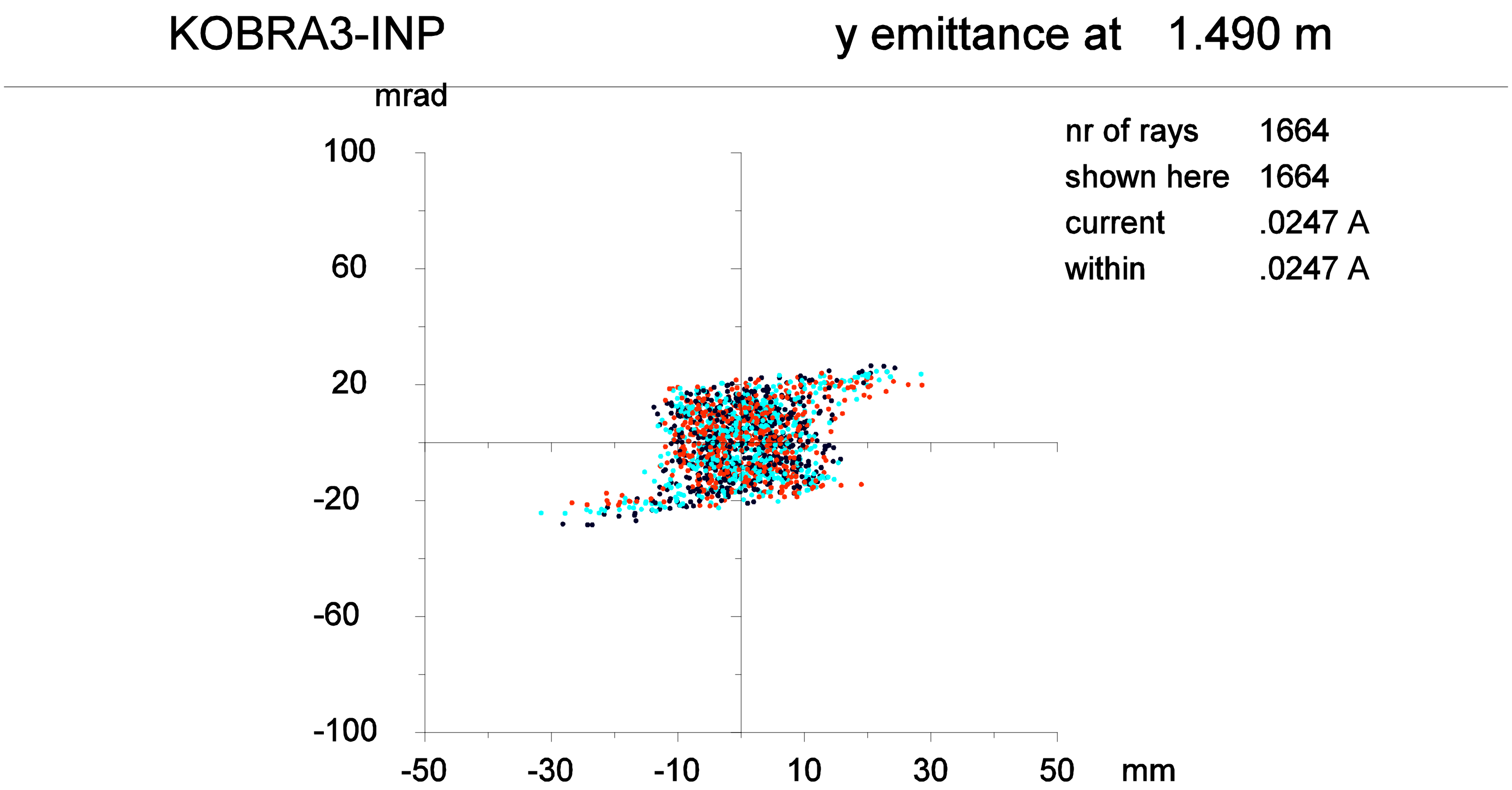
quadrupole


KOBRA3-INP
y emittance at 1.470 m
mrad
100
60
20
-20
-60
-100
-50
-30
-10
10
30
50
mm
nr of rays 1664
shown here 1664
current .0247 A
within .0247 A

quadrupole

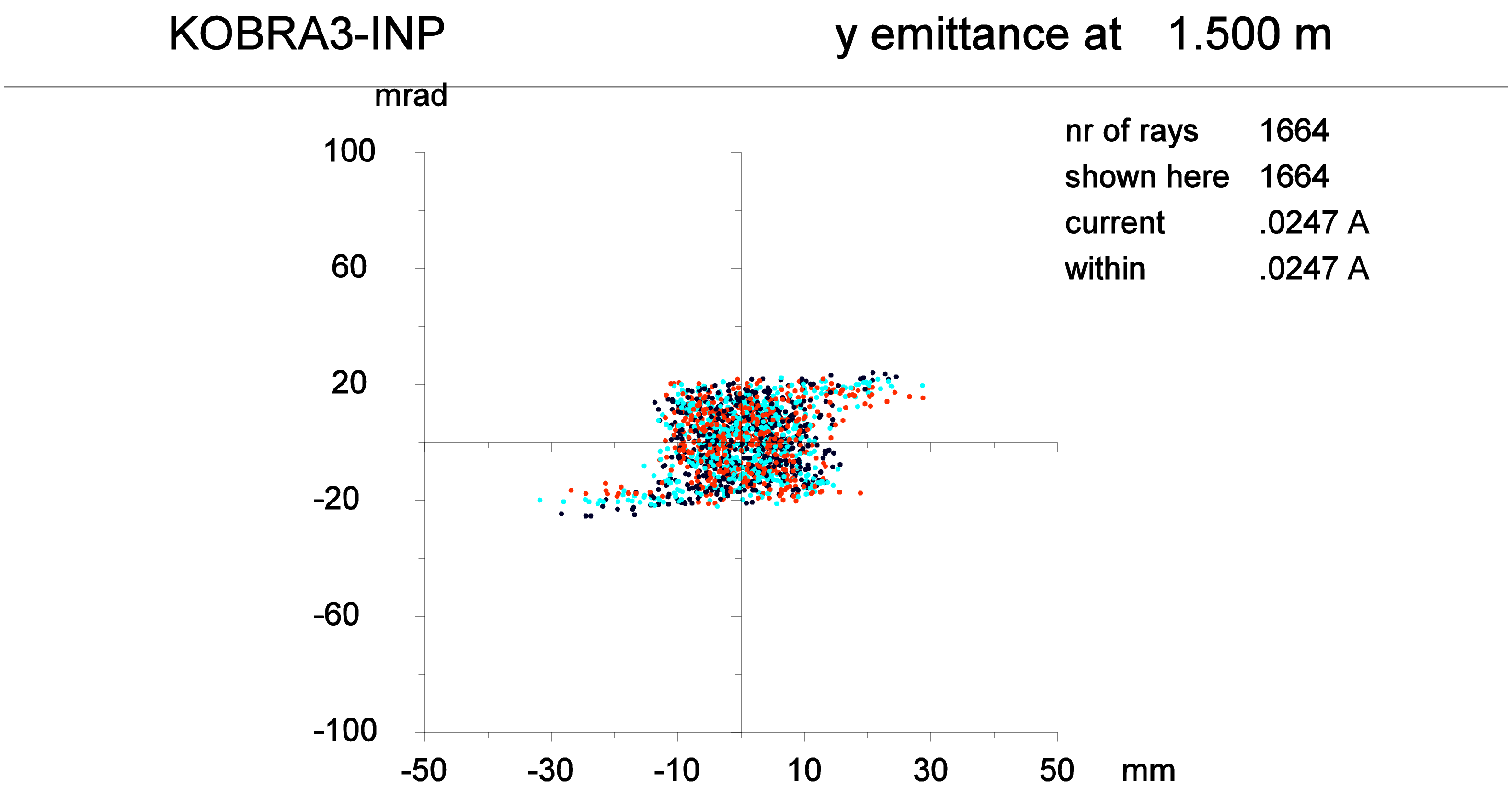

KOBRA3-INP
y emittance at 1.480 m
mrad
100
60
20
-20
-60
-100
-50
-30
-10
10
30
50
mm
nr of rays 1664
shown here 1664
current .0247 A
within .0247 A

quadrupole

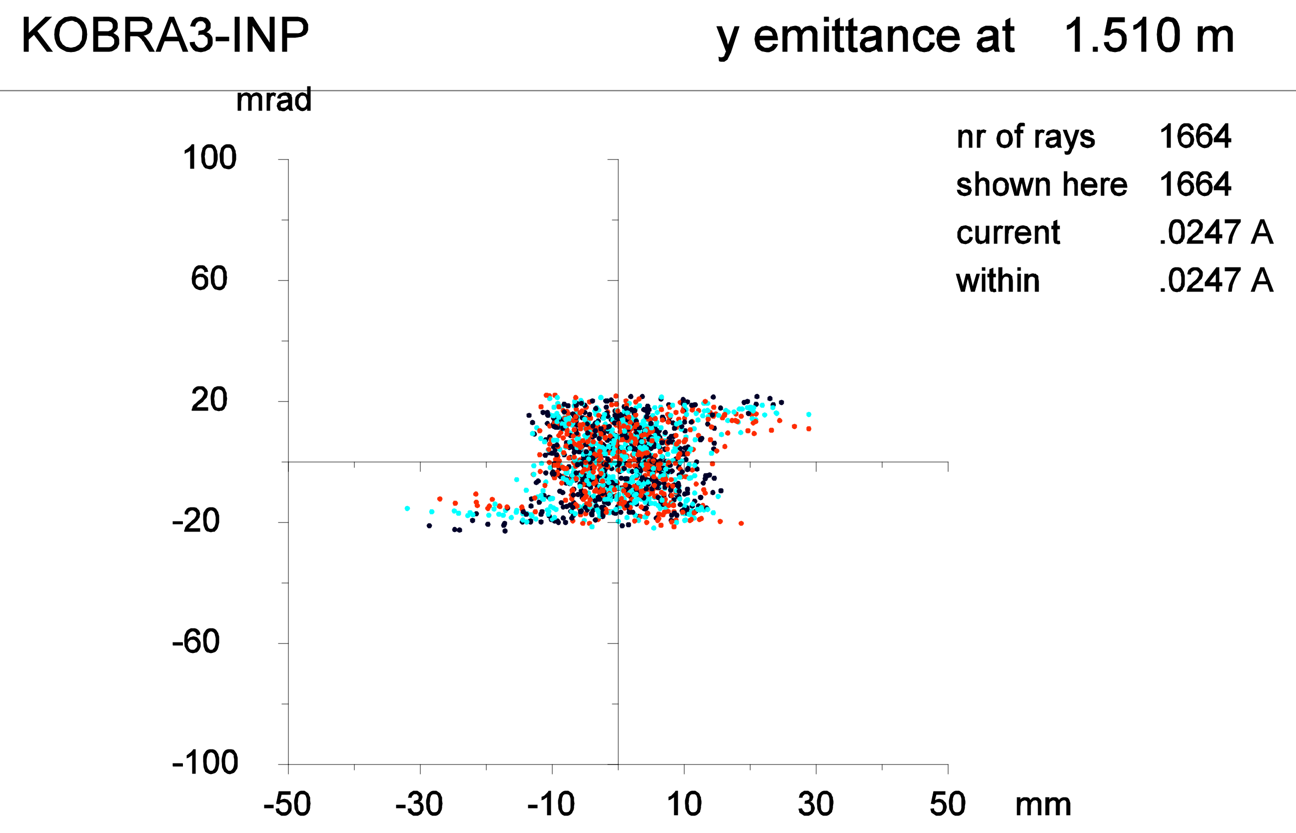


KOBRA3-INP
y emittance at 1.490 m
mrad
100
60
20
-20
-60
-100
-50
-30
-10
10
30
50
mm
nr of rays 1664
shown here 1664
current .0247 A
within .0247 A

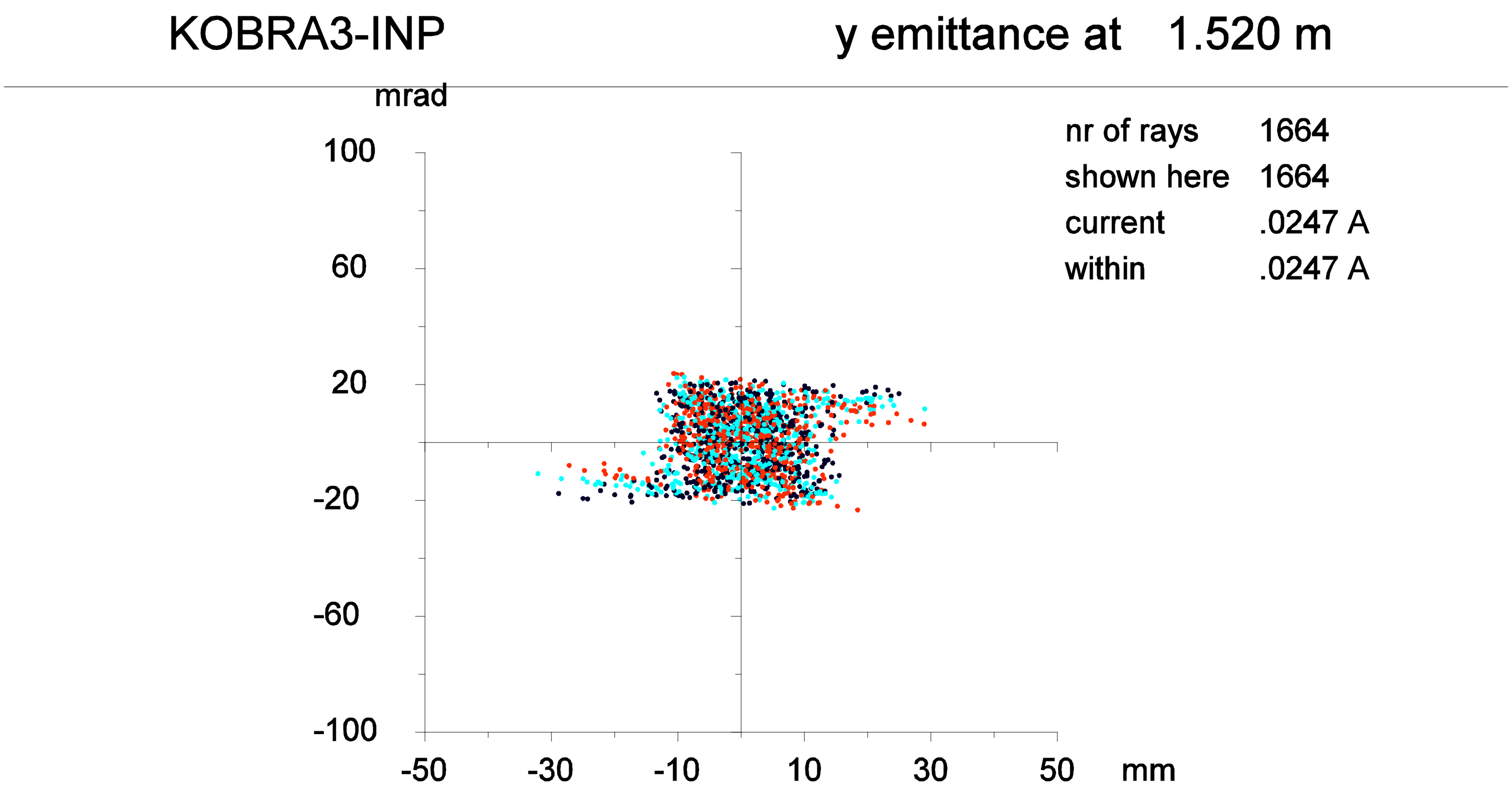
quadrupole


KOBRA3-INP
y emittance at 1.500 m
mrad
100
60
20
-20
-60
-100
-50
-30
-10
10
30
50
mm
nr of rays 1664
shown here 1664
current .0247 A
within .0247 A

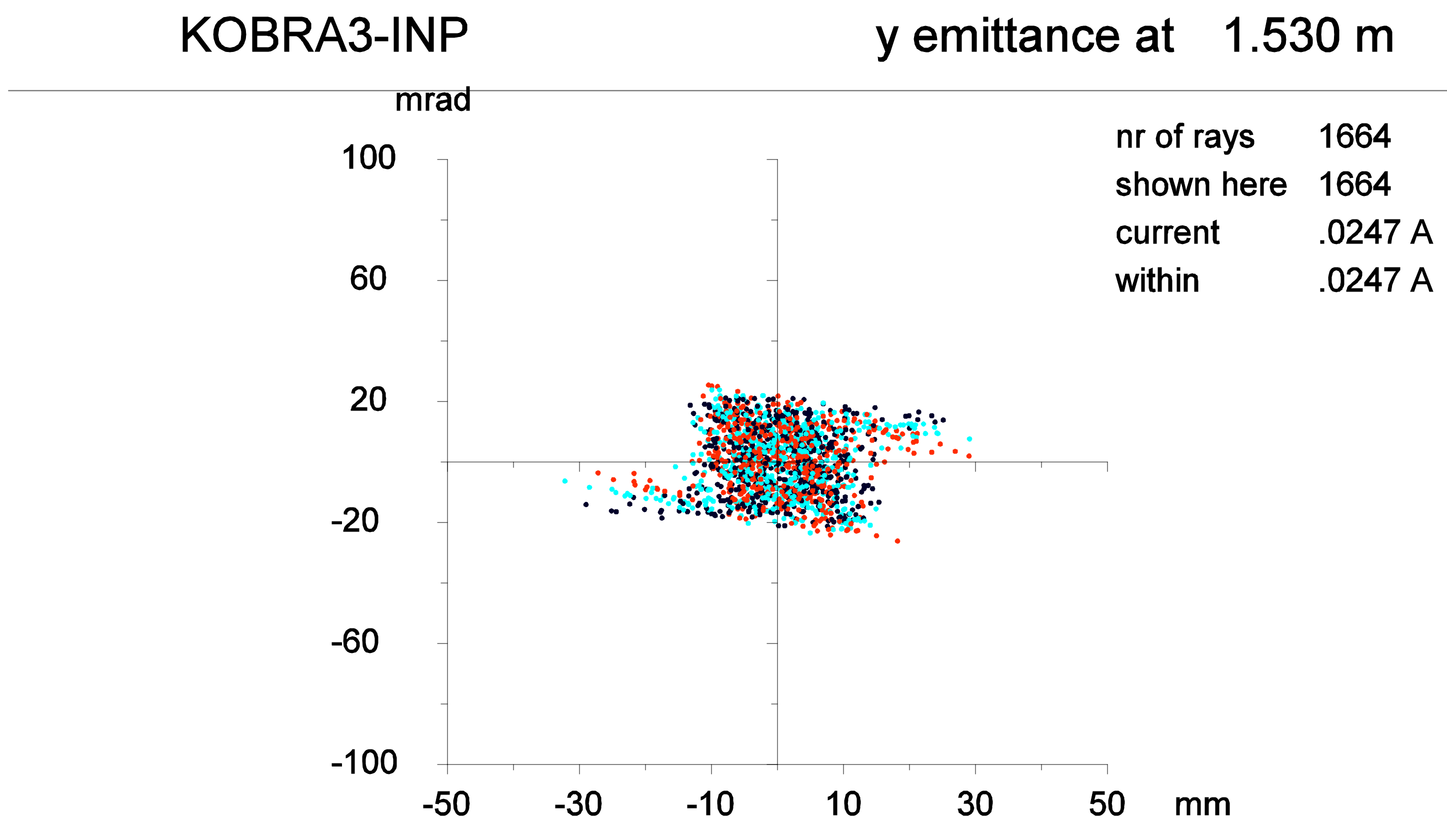
quadrupole


KOBRA3-INP
y emittance at 1.510 m
mrad
100
60
20
-20
-60
-100
-50
-30
-10
10
30
50
mm
nr of rays 1664
shown here 1664
current .0247 A
within .0247 A

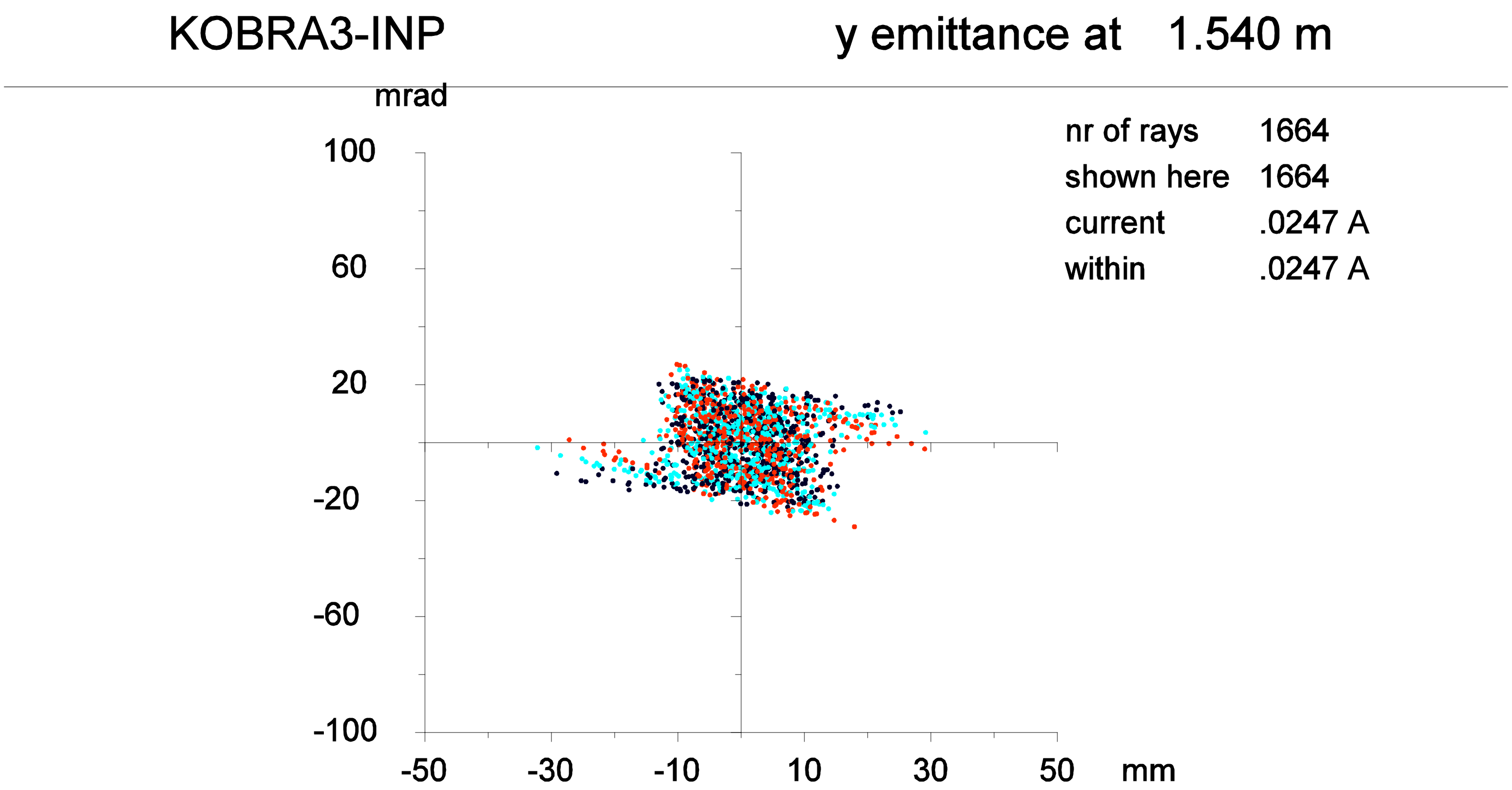
quadrupole


KOBRA3-INP
y emittance at 1.520 m
mrad
100
60
20
-20
-60
-100
-50
-30
-10
10
30
50
mm
nr of rays 1664
shown here 1664
current .0247 A
within .0247 A

quadrupole

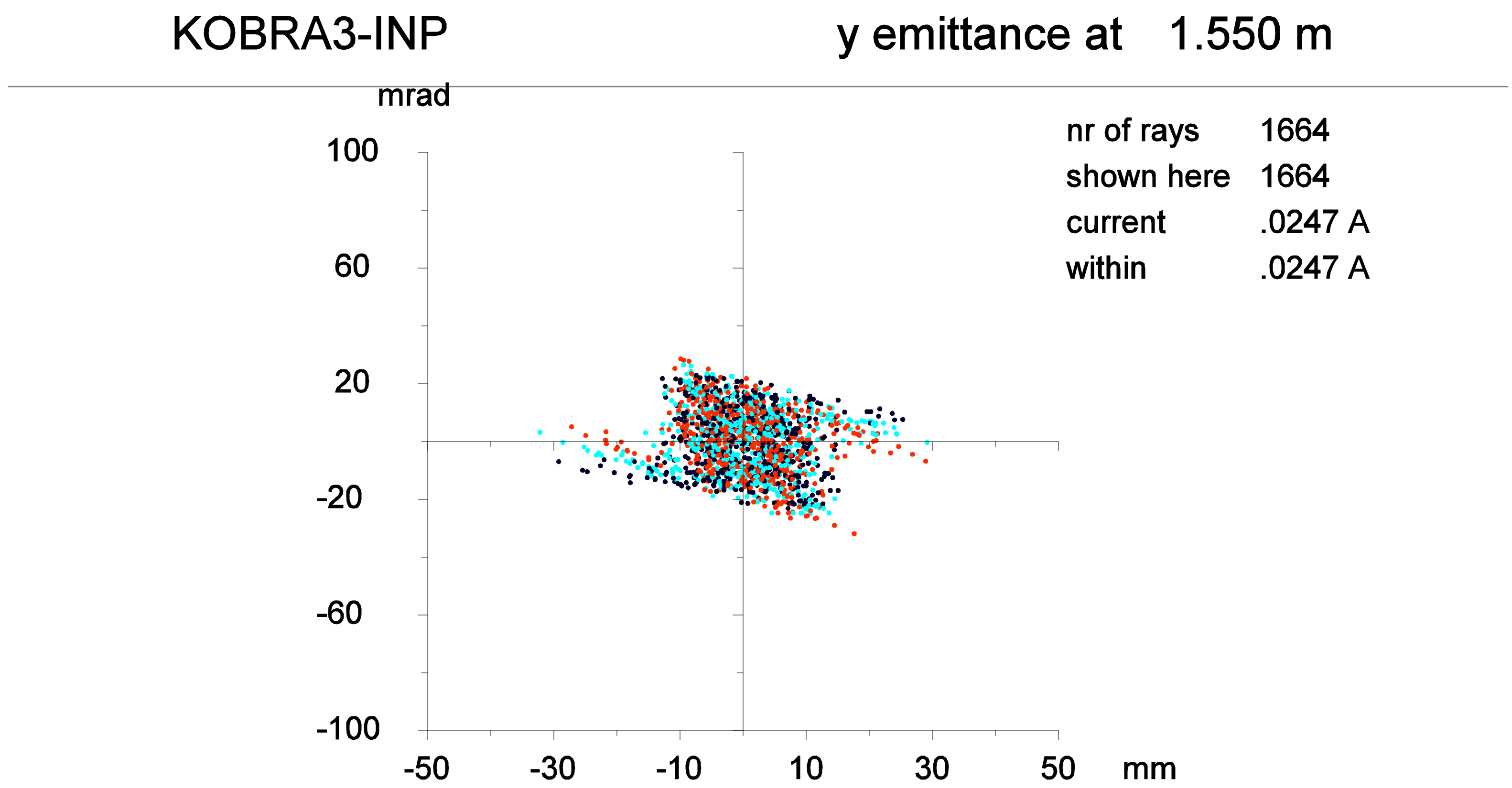

KOBRA3-INP
y emittance at 1.530 m
mrad
nr of rays 1664
shown here 1664
current .0247 A
within .0247 A
100
60
20
-20
-60
-100
-50
-30
-10
10
30
50
mm

quadrupole



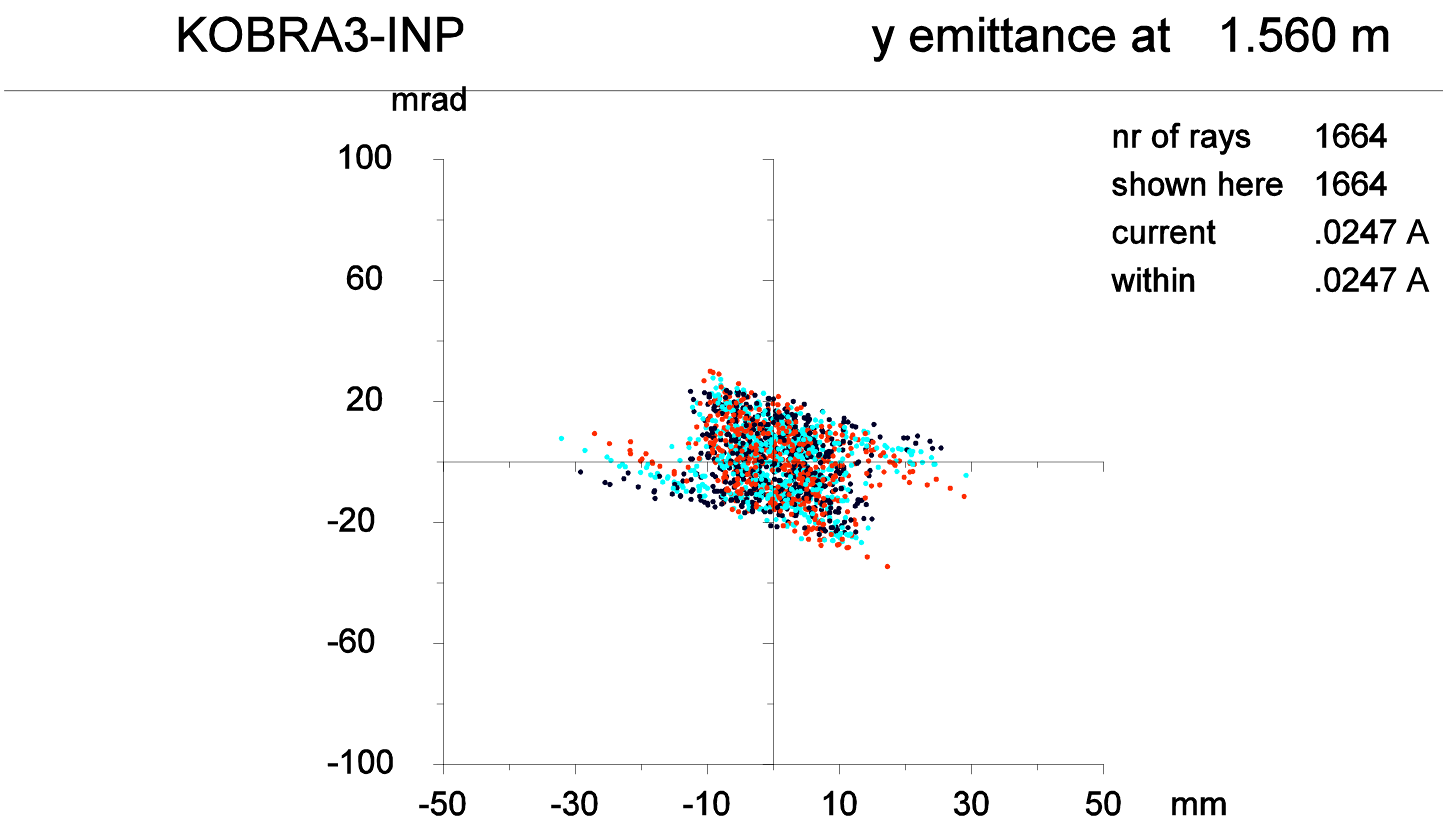
KOBRA3-INP
y emittance at 1.540 m
mrad
100
60
20
-20
-60
-100
-50
-30
-10
10
30
50
mm
nr of rays 1664
shown here 1664
current .0247 A
within .0247 A

quadrupole

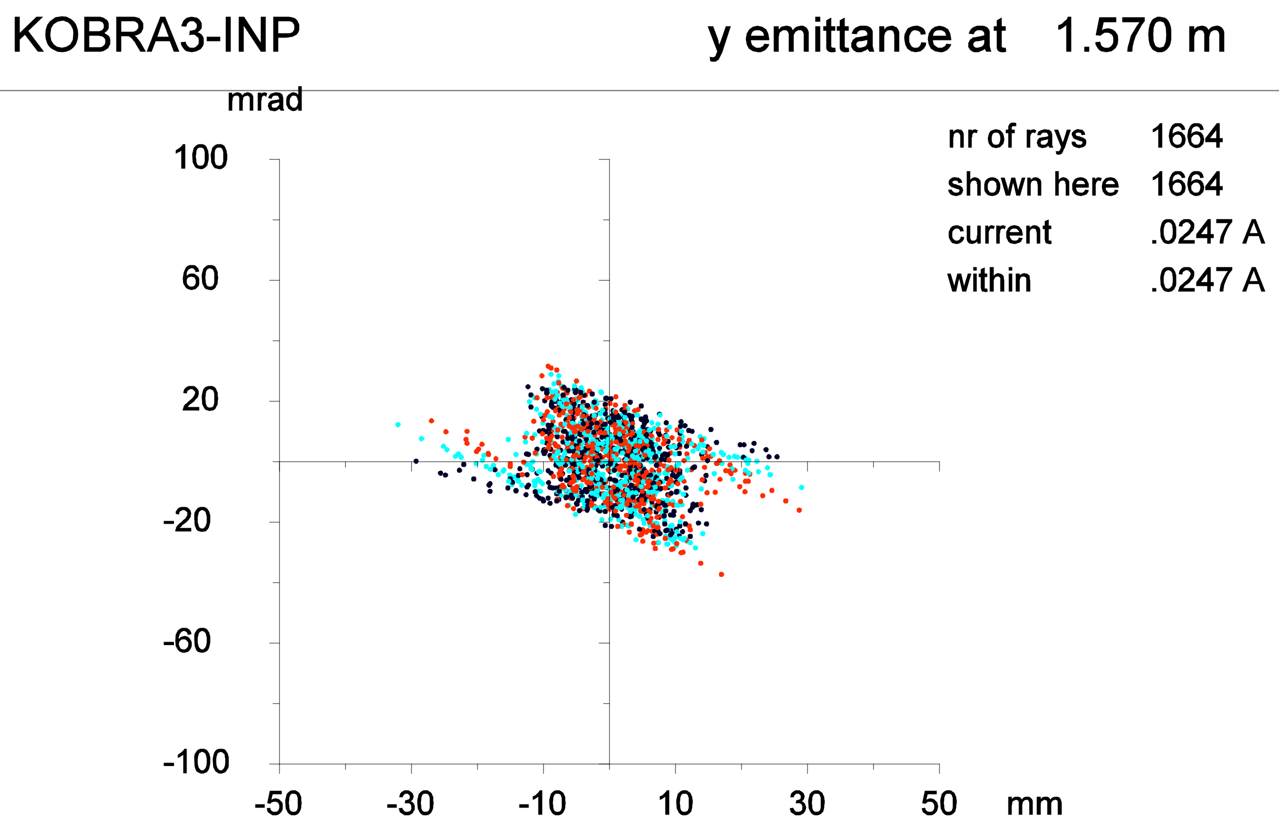


KOBRA3-INP
y emittance at 1.550 m
mrad
nr of rays 1664
shown here 1664
current .0247 A
within .0247 A
100
60
20
-20
-60
-100
-50
-30
-10
10
30
50
mm

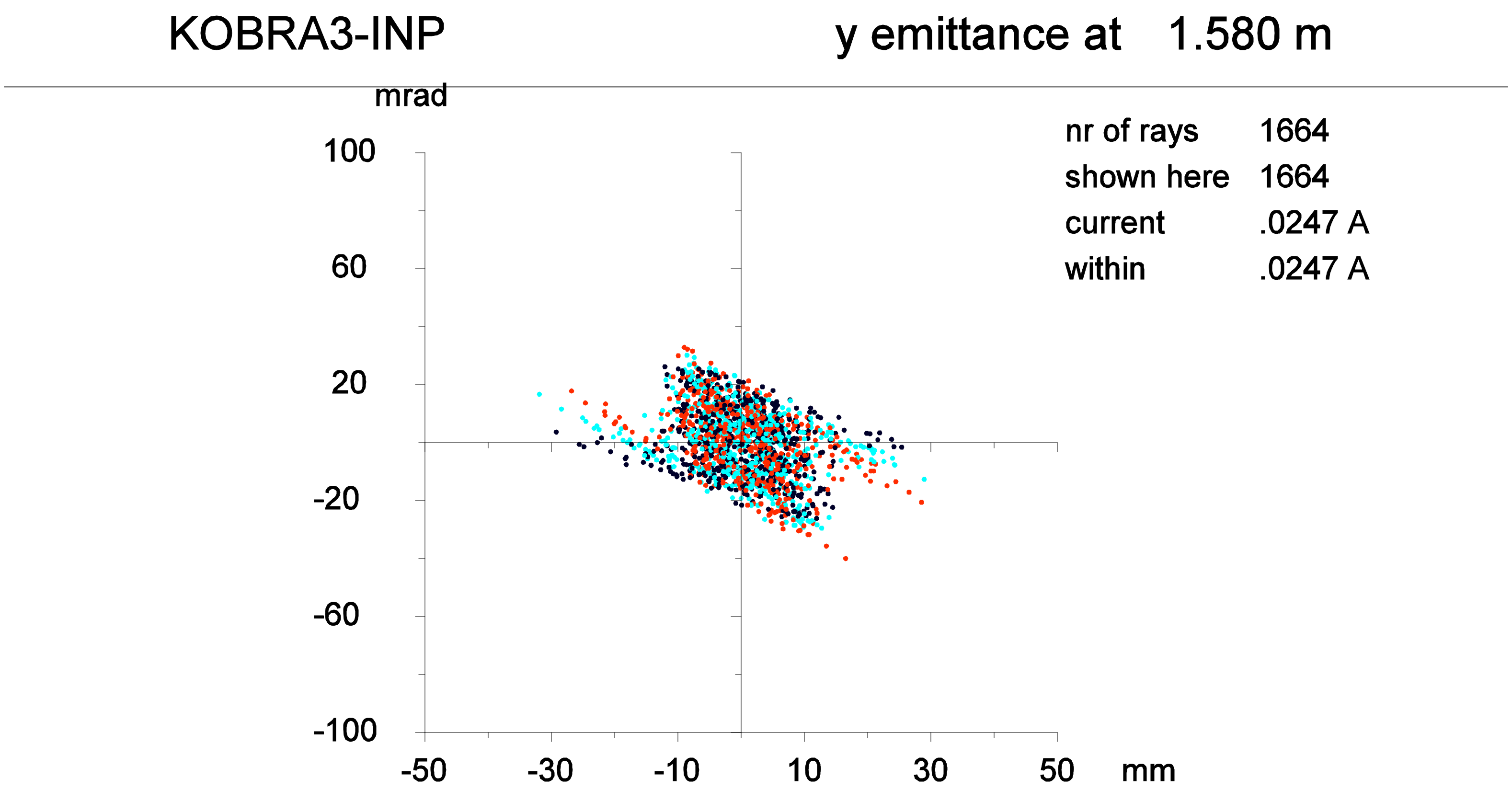
quadrupole


KOBRA3-INP
y emittance at 1.560 m
mrad
nr of rays 1664
shown here 1664
current .0247 A
within .0247 A
100
60
20
-20
-60
-100
-50
-30
-10
10
30
50
mm

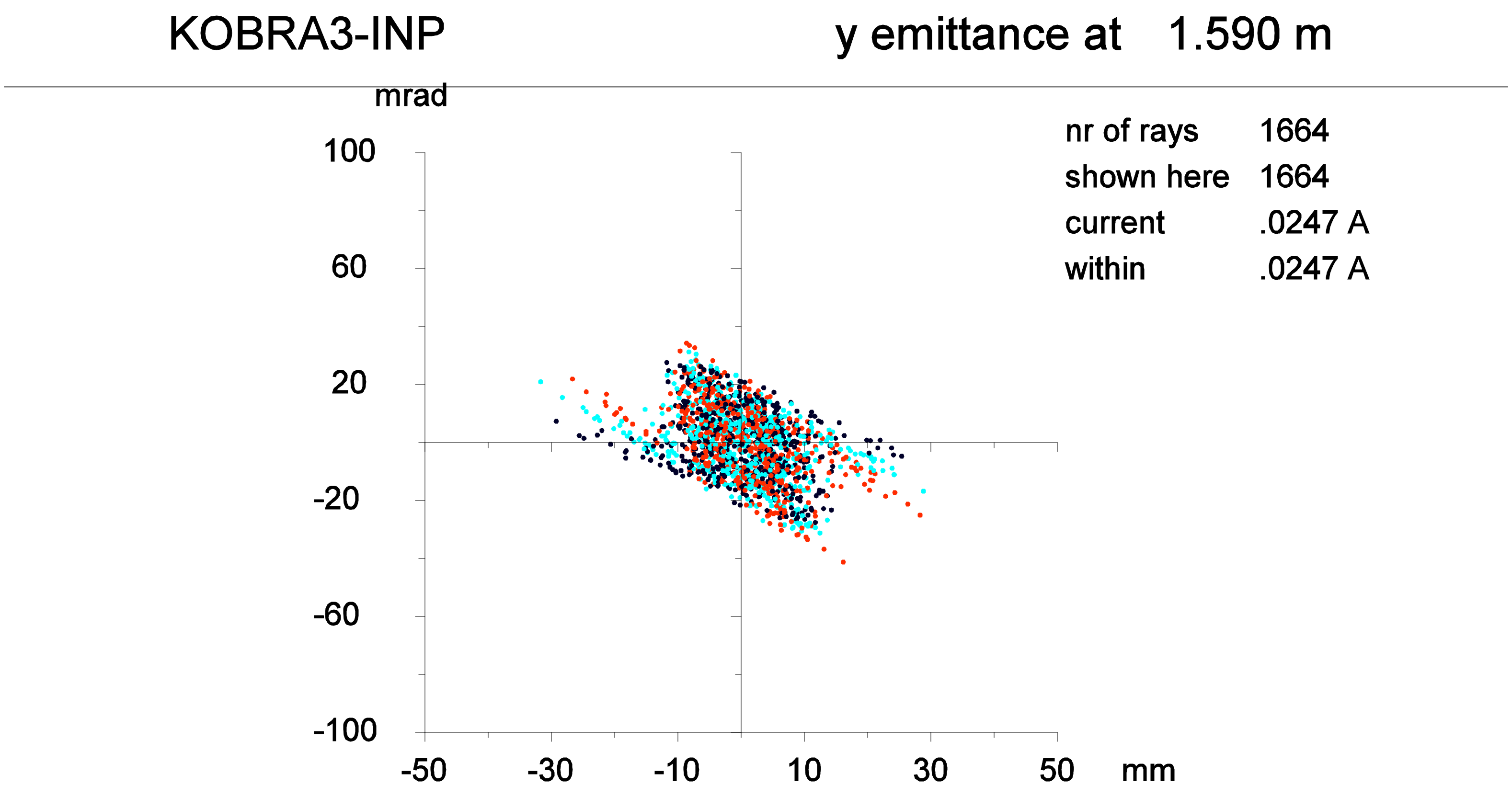
quadrupole


KOBRA3-INP
y emittance at 1.570 m
mrad
100
60
20
-20
-60
-100
-50
-30
-10
10
30
50
mm
nr of rays 1664
shown here 1664
current .0247 A
within .0247 A

quadrupole

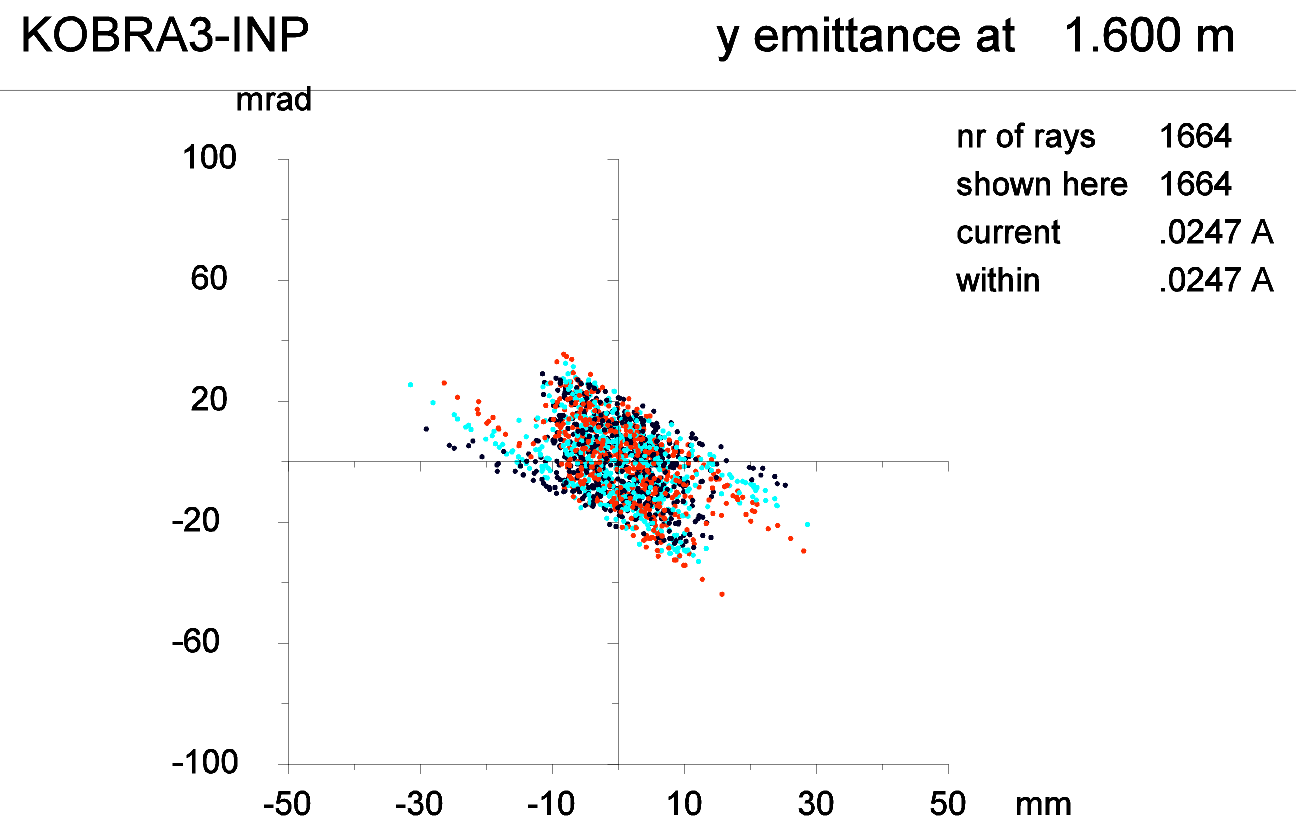

KOBRA3-INP
y emittance at 1.580 m
mrad
100
60
20
-20
-60
-100
-50
-30
-10
10
30
50
mm
nr of rays 1664
shown here 1664
current .0247 A
within .0247 A

quadrupole

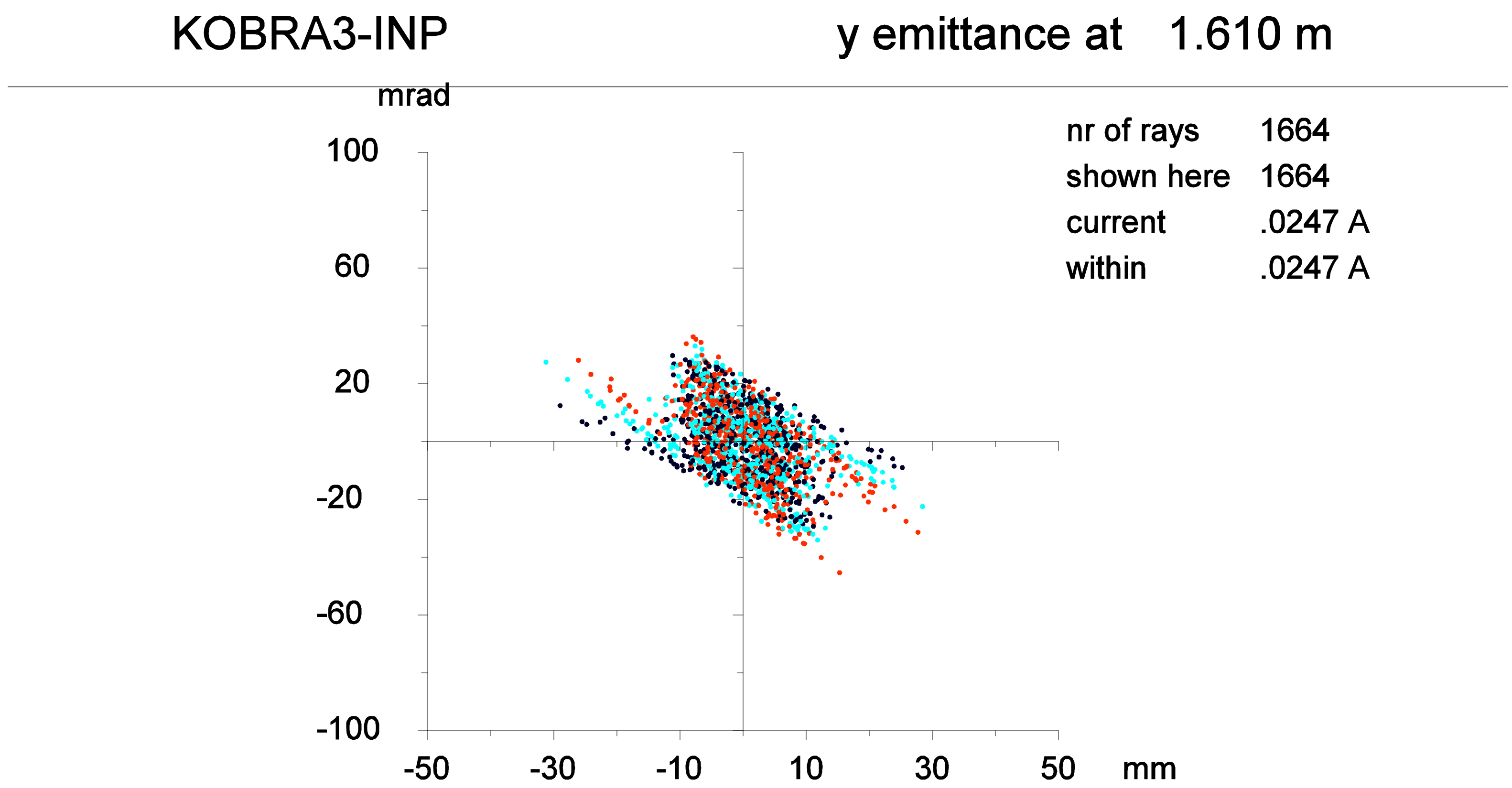


KOBRA3-INP
y emittance at 1.590 m
mrad
100
60
20
-20
-60
-100
-50
-30
-10
10
30
50
mm
nr of rays 1664
shown here 1664
current .0247 A
within .0247 A

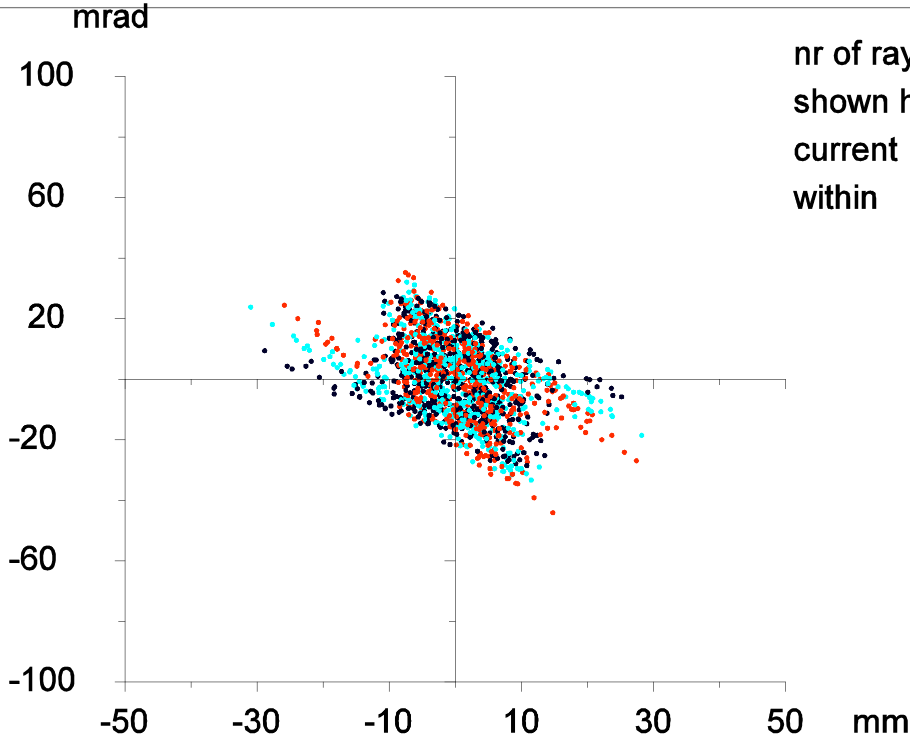
quadrupole


KOBRA3-INP
y emittance at 1.600 m
mrad
100
60
20
-20
-60
-100
-50
-30
-10
10
30
50
mm
nr of rays 1664
shown here 1664
current .0247 A
within .0247 A

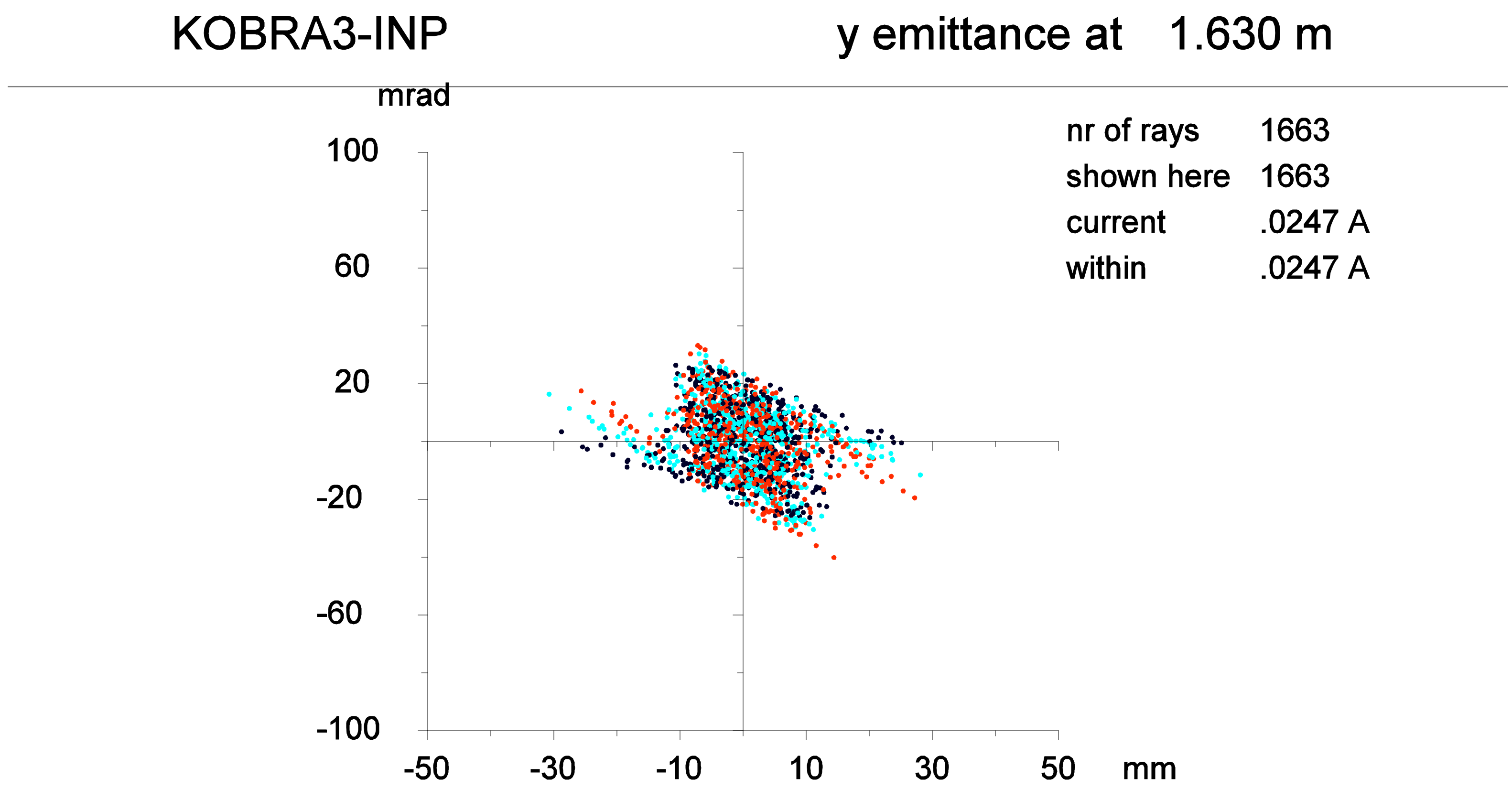
quadrupole


KOBRA3-INP
y emittance at 1.610 m
mrad
100
60
20
-20
-60
-100
-50
-30
-10
10
30
50
mm
nr of rays 1664
shown here 1664
current .0247 A
within .0247 A

KOBRA3-INP y emittance at 1.620 m



nr of rays	1663
shown here	1663
current	.0247 A
within	.0247 A


KOBRA3-INP
y emittance at 1.630 m
mrad
nr of rays 1663
shown here 1663
current .0247 A
within .0247 A
100
60
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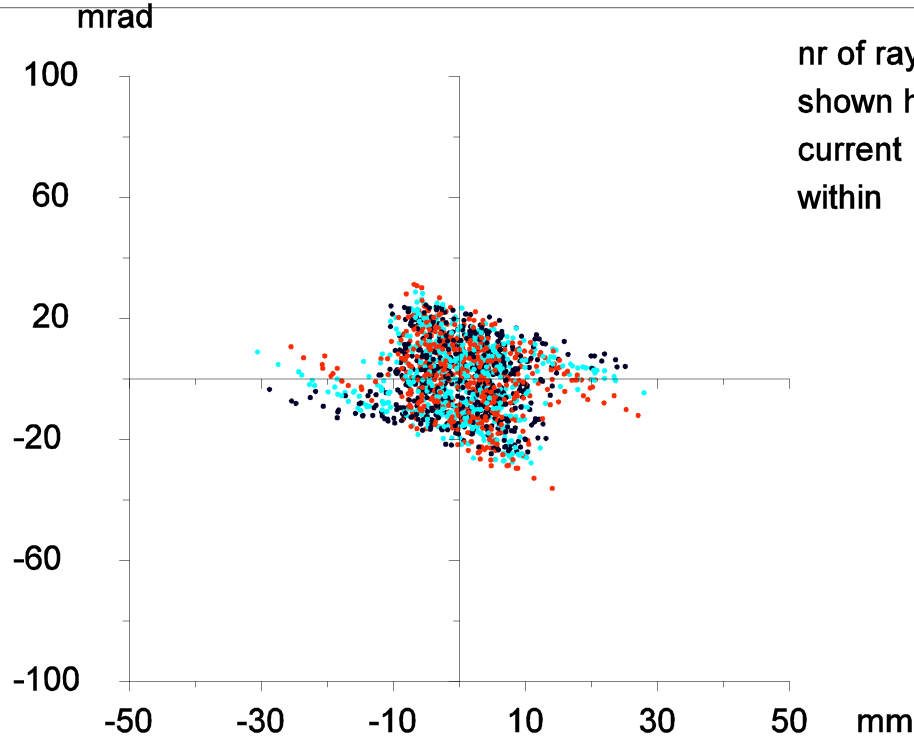
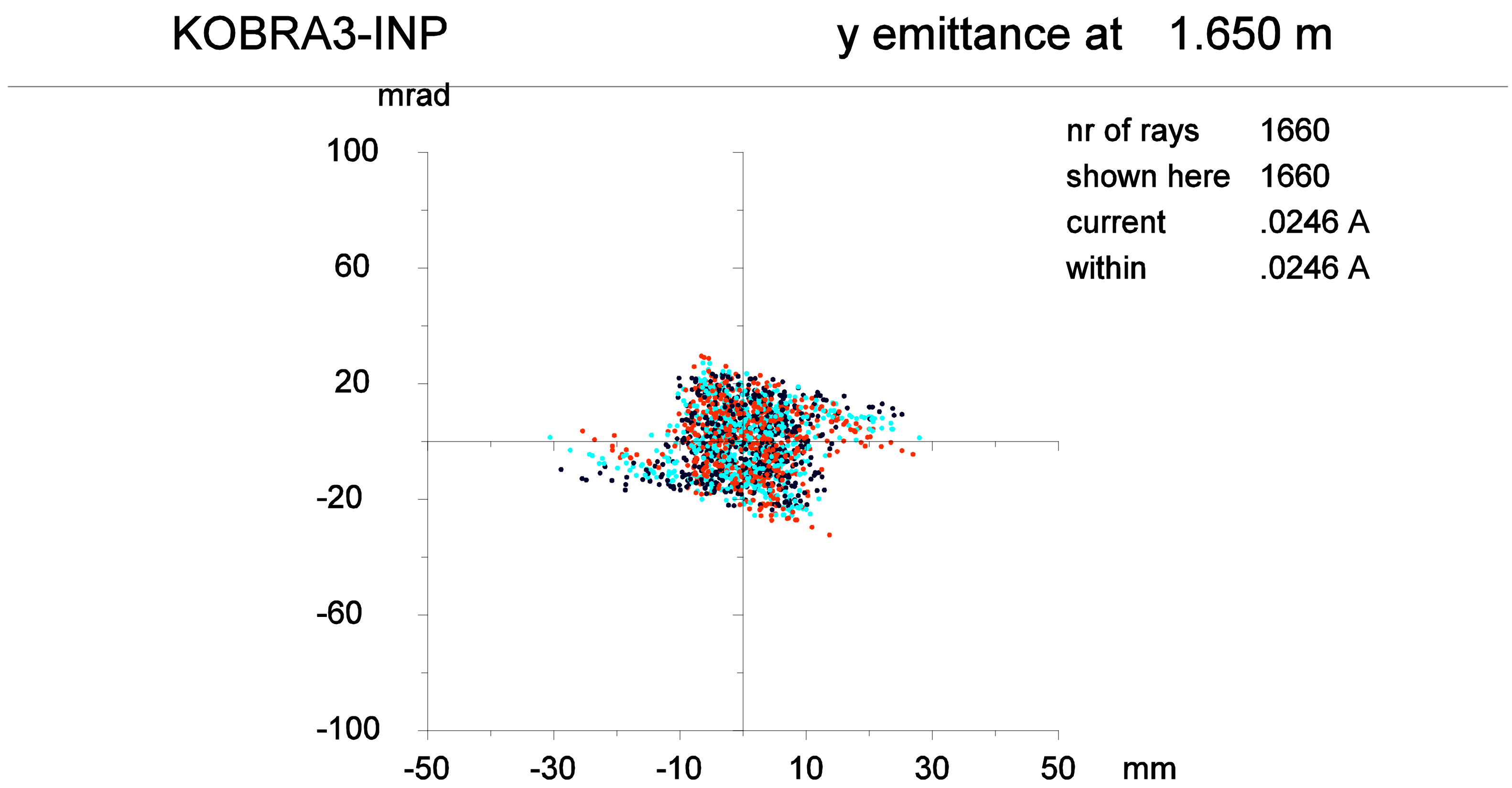
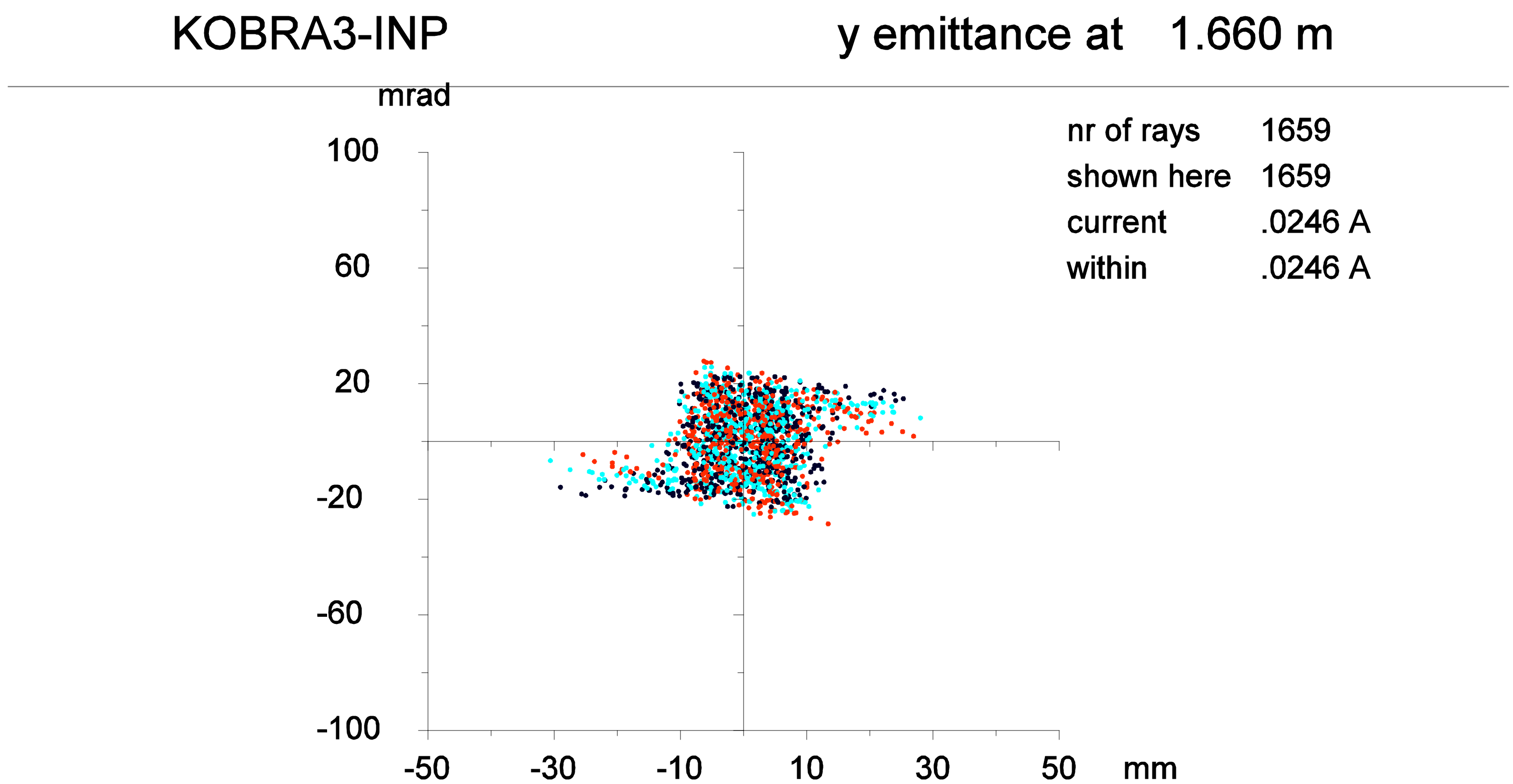
-20
-60
-100
-50
-30
-10
10
30
50
mm

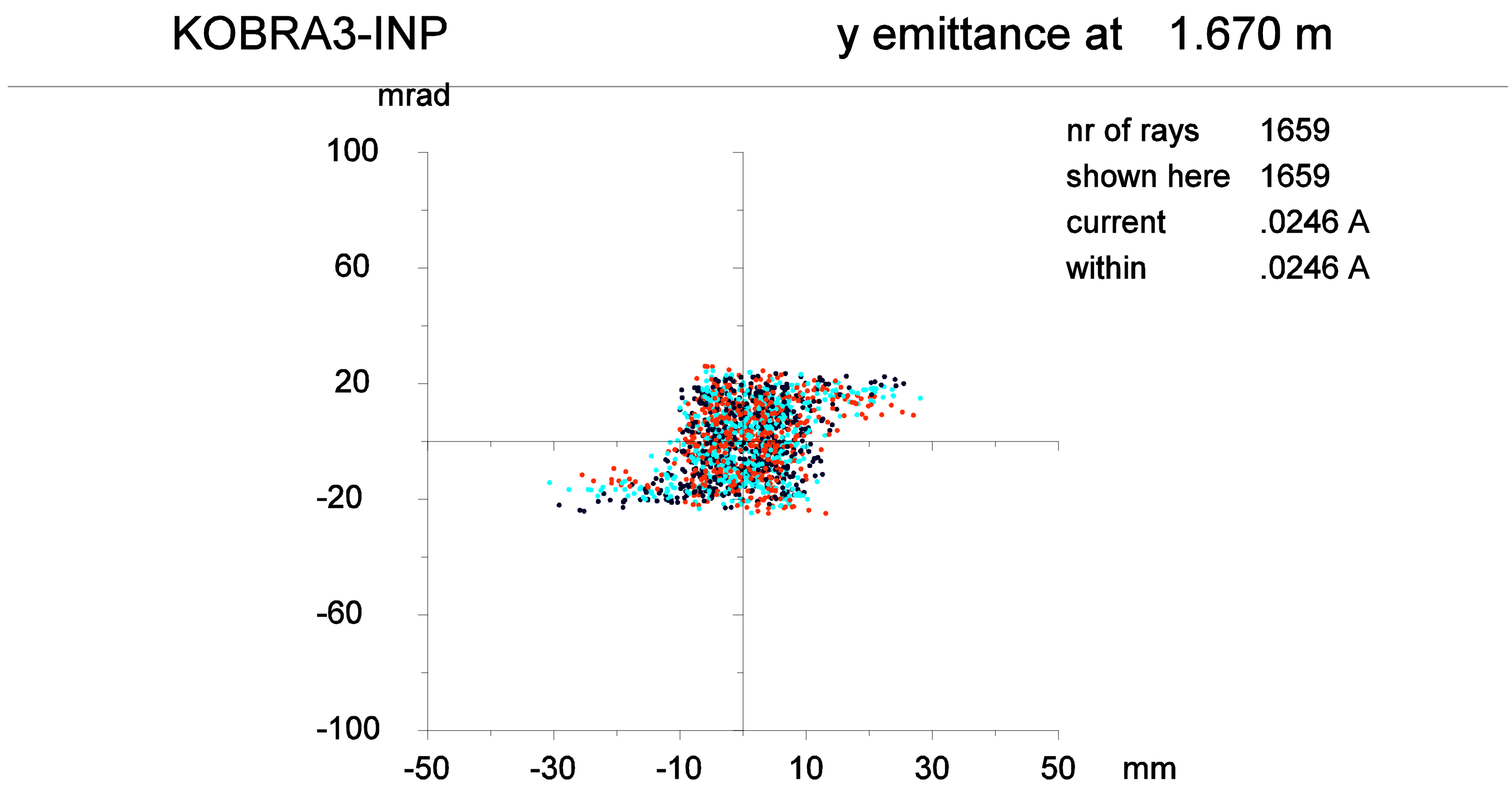
KOBRA3-INP y emittance at 1.640 m



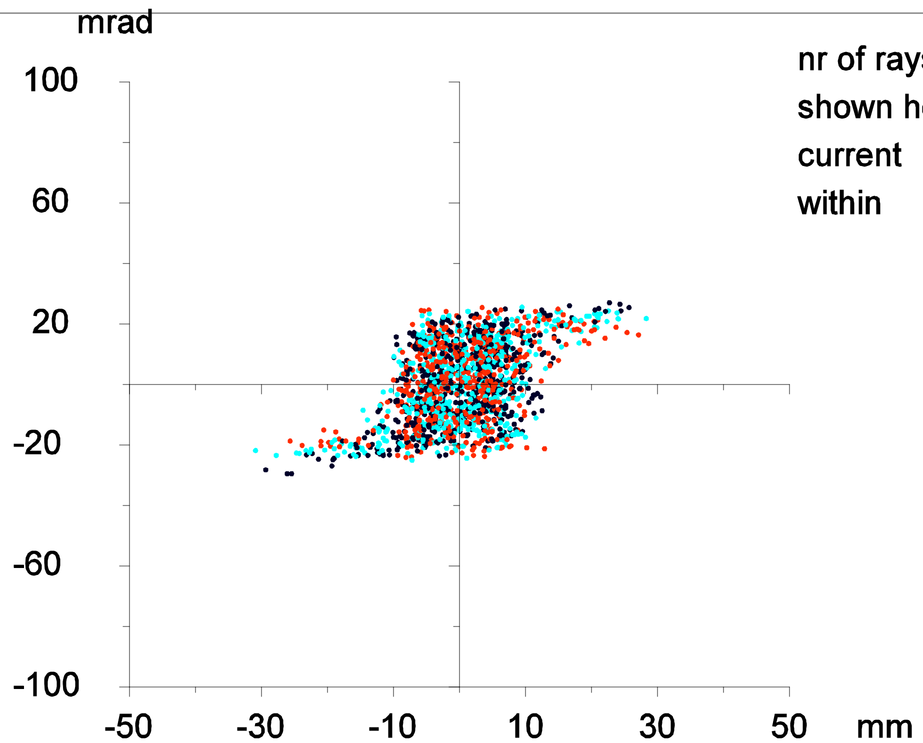
nr of rays	1660
shown here	1660
current	.0246 A
within	.0246 A


KOBRA3-INP
y emittance at 1.650 m
mrad
100
60
20
-20
-60
-100
-50
-30
-10
10
30
50
mm
nr of rays 1660
shown here 1660
current .0246 A
within .0246 A


KOBRA3-INP
y emittance at 1.660 m
mrad
nr of rays 1659
shown here 1659
current .0246 A
within .0246 A
100
60
20
-20
-60
-100
-50
-30
-10
10
30
50
mm

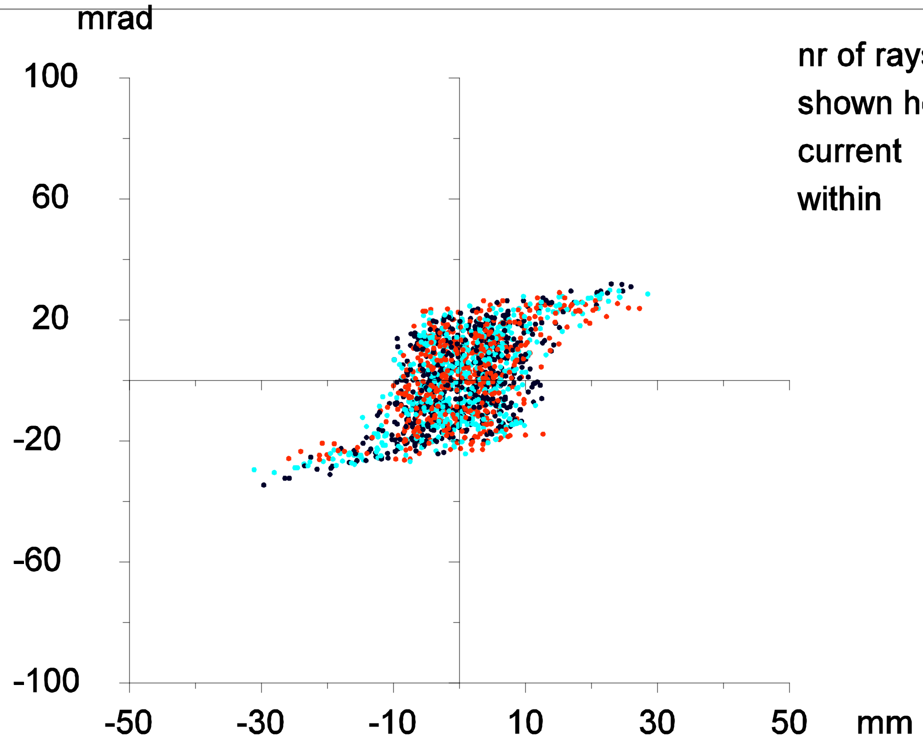

KOBRA3-INP
y emittance at 1.670 m
mrad
100
60
20
-20
-60
-100
-50
-30
-10
10
30
50
mm
nr of rays 1659
shown here 1659
current .0246 A
within .0246 A

KOBRA3-INP y emittance at 1.680 m

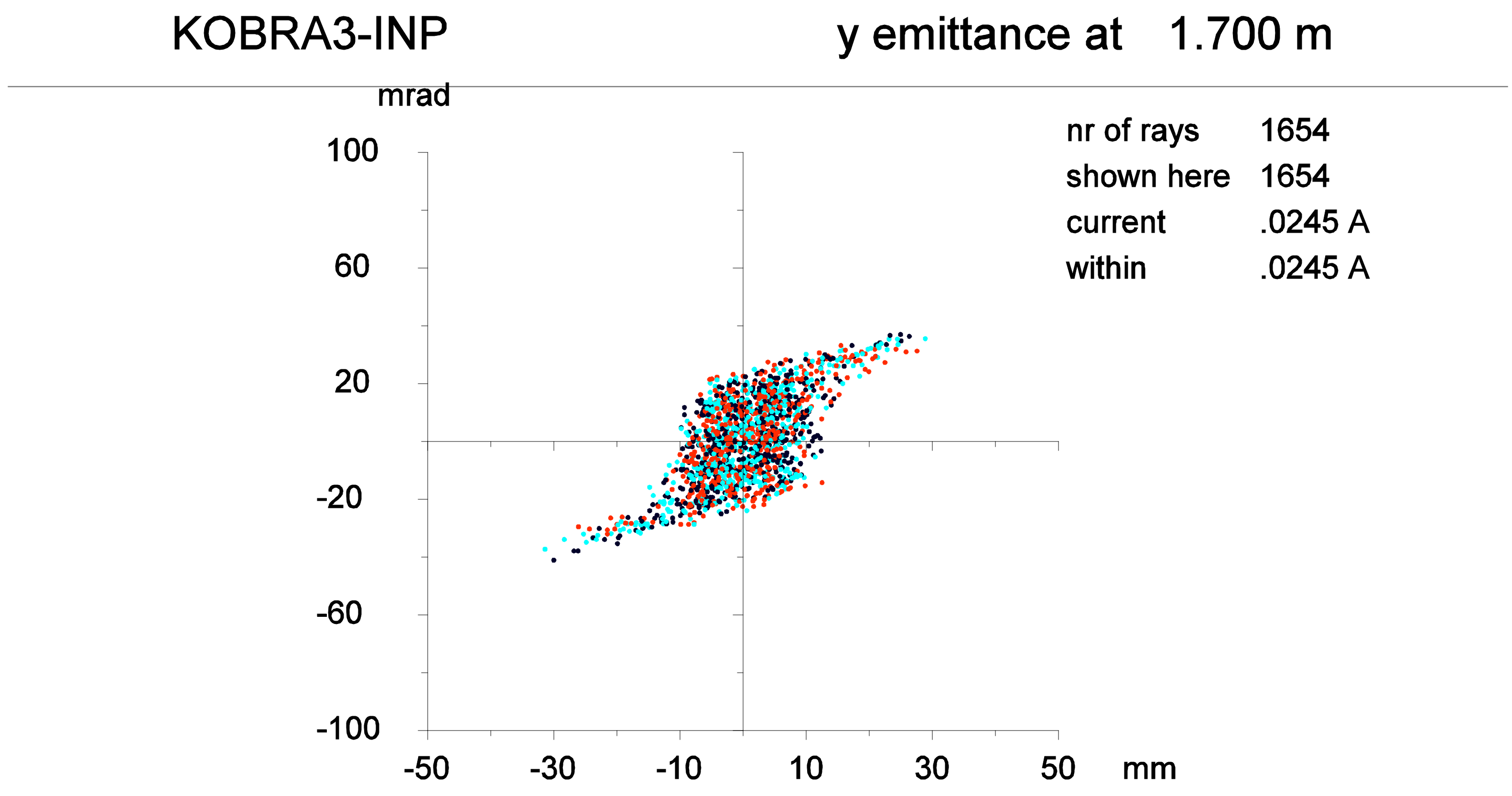


nr of rays	1657
shown here	1657
current	.0246 A
within	.0246 A

KOBRA3-INP y emittance at 1.690 m

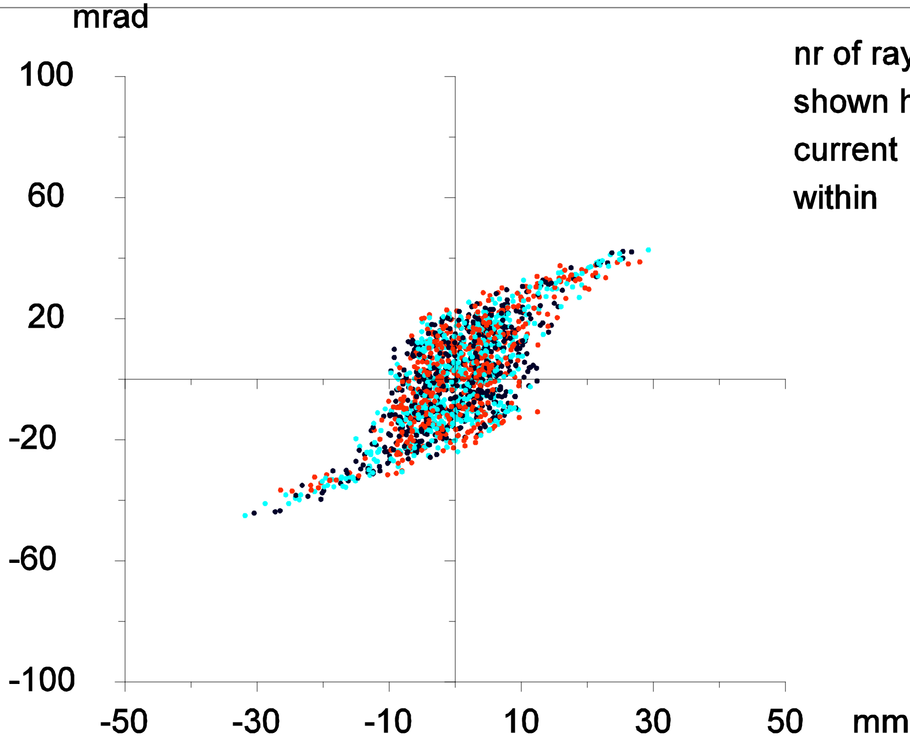


nr of rays	1656
shown here	1656
current	.0246 A
within	.0246 A

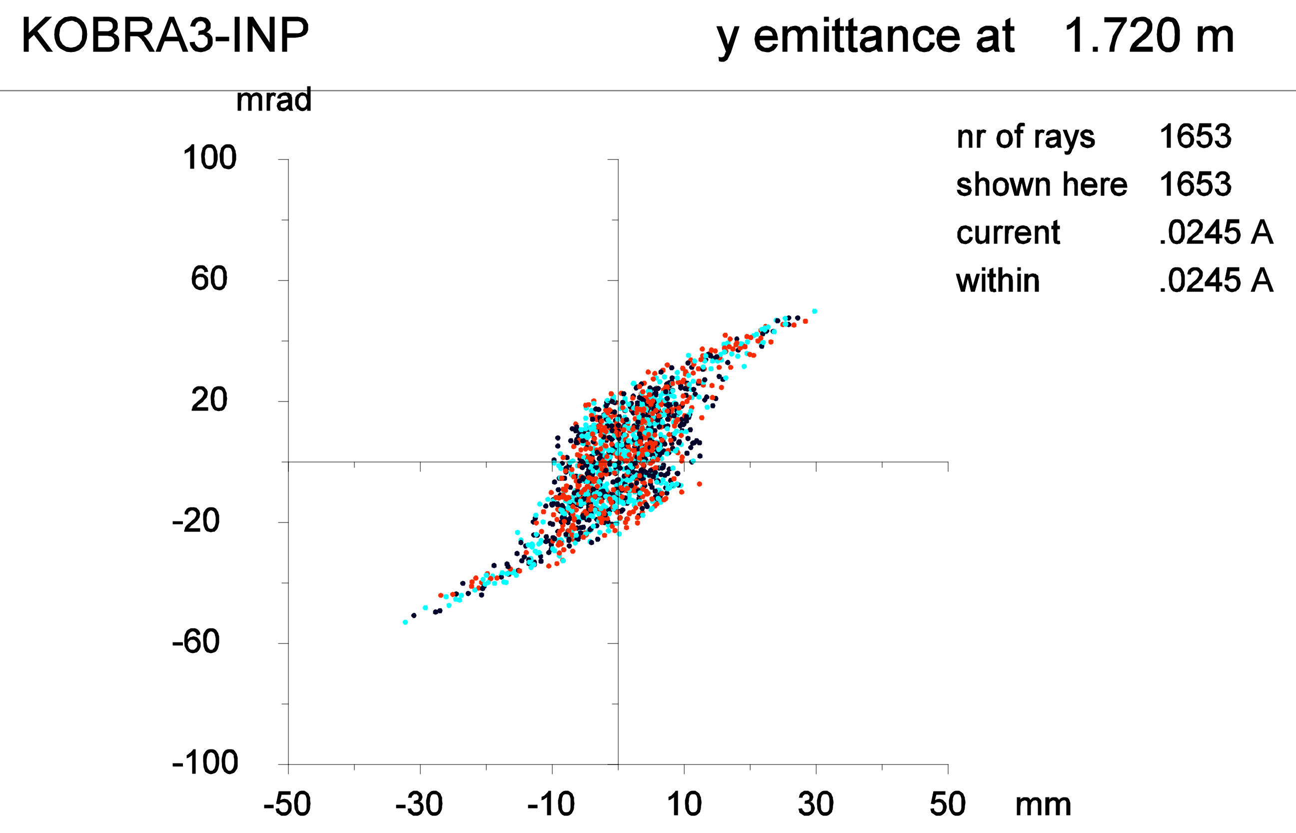

KOBRA3-INP
y emittance at 1.700 m
mrad
100
60
20
-20
-60
-100
-50
-30
-10
10
30
50
mm
nr of rays 1654
shown here 1654
current .0245 A
within .0245 A

KOBRA3-INP

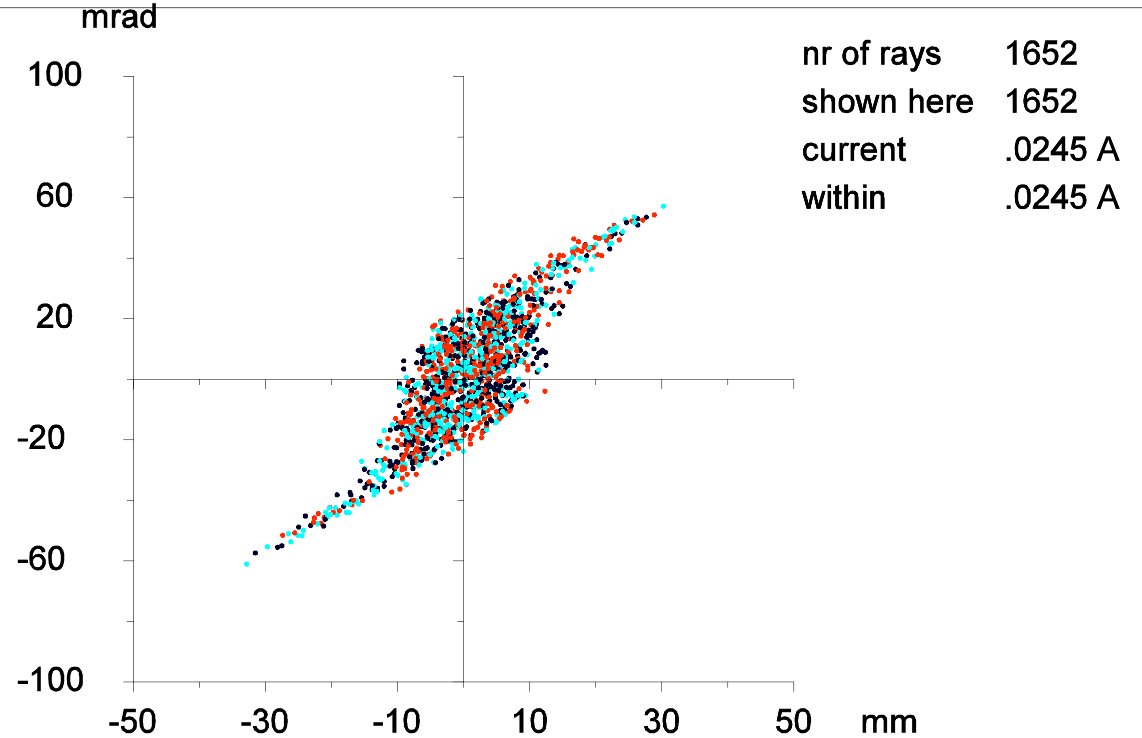
y emittance at 1.710 m



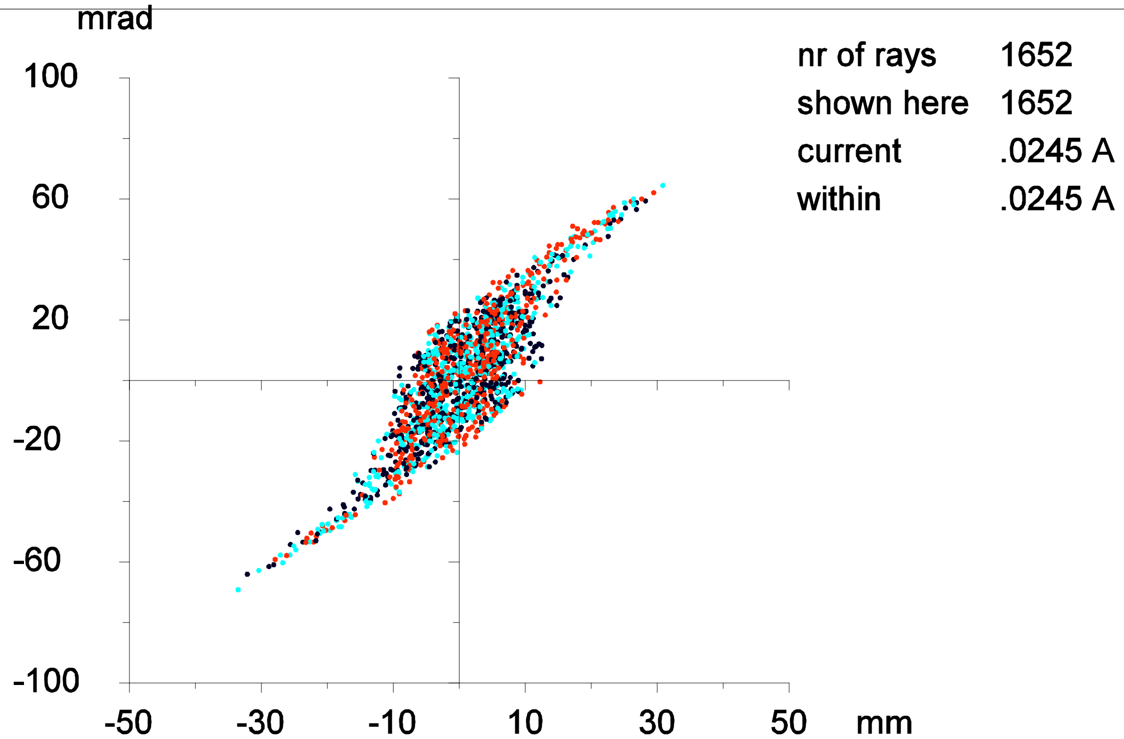
nr of rays	1653
shown here	1653
current	.0245 A
within	.0245 A

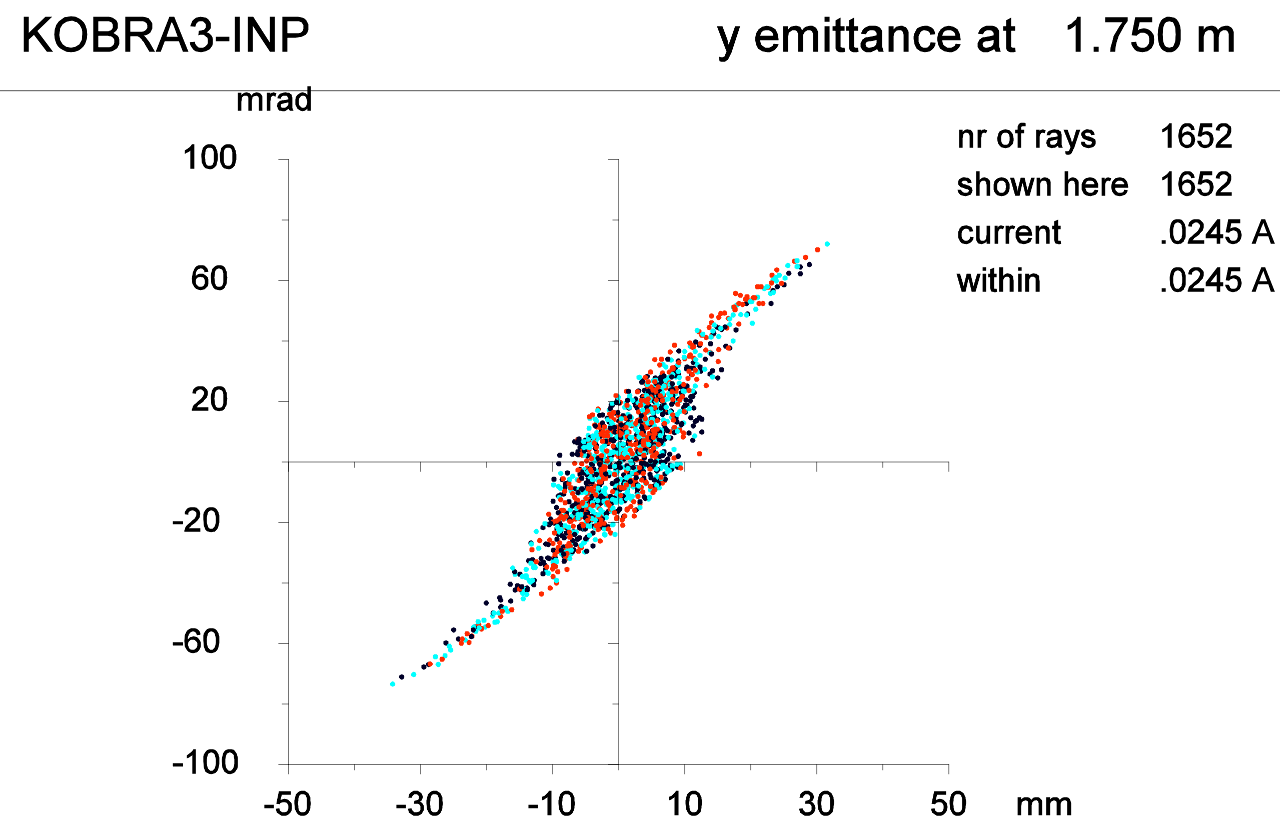

KOBRA3-INP
y emittance at 1.720 m
mrad
100
60
20
-20
-60
-100
-50
-30
-10
10
30
50
mm
nr of rays 1653
shown here 1653
current .0245 A
within .0245 A

KOBRA3-INP y emittance at 1.730 m

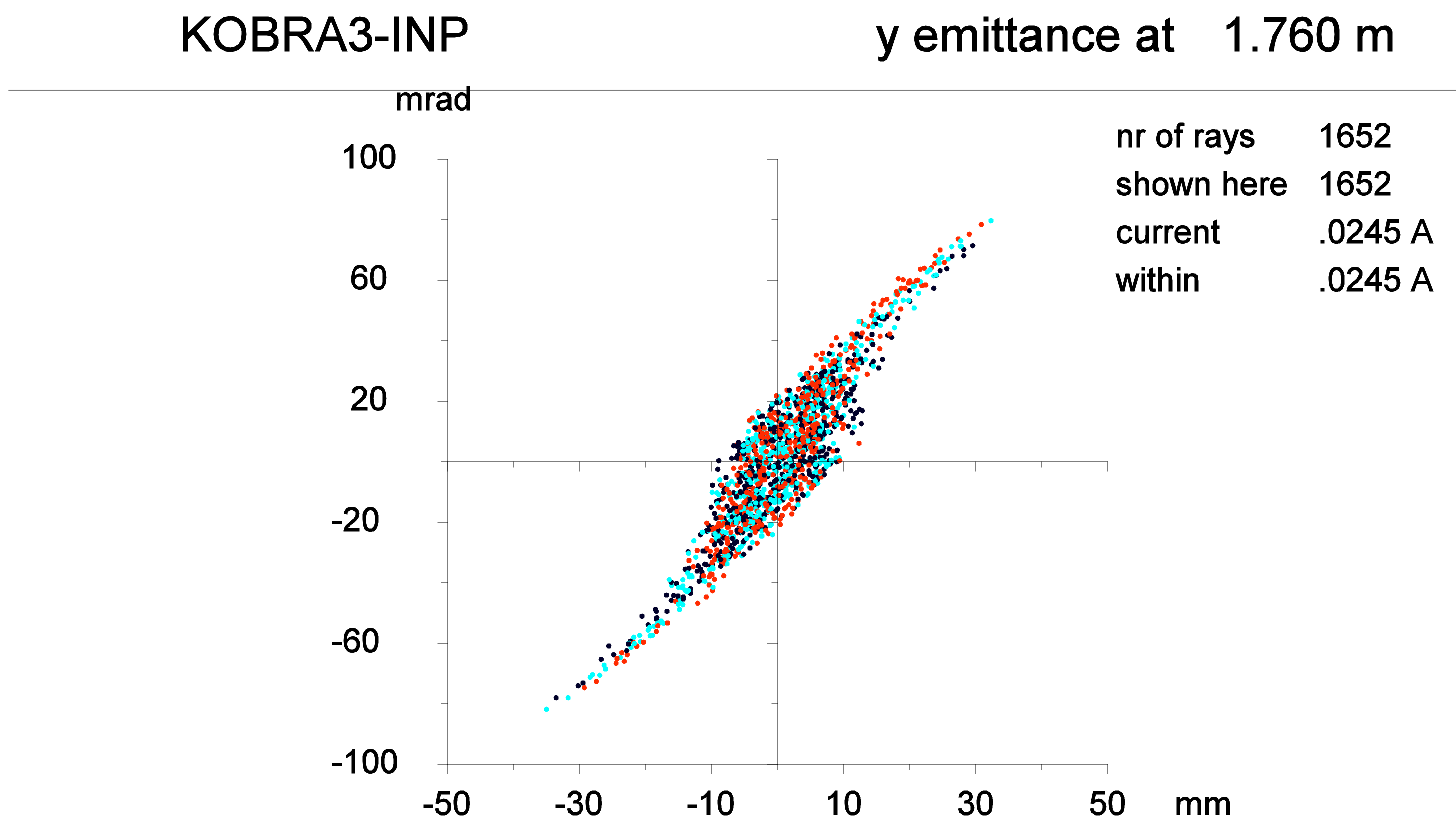


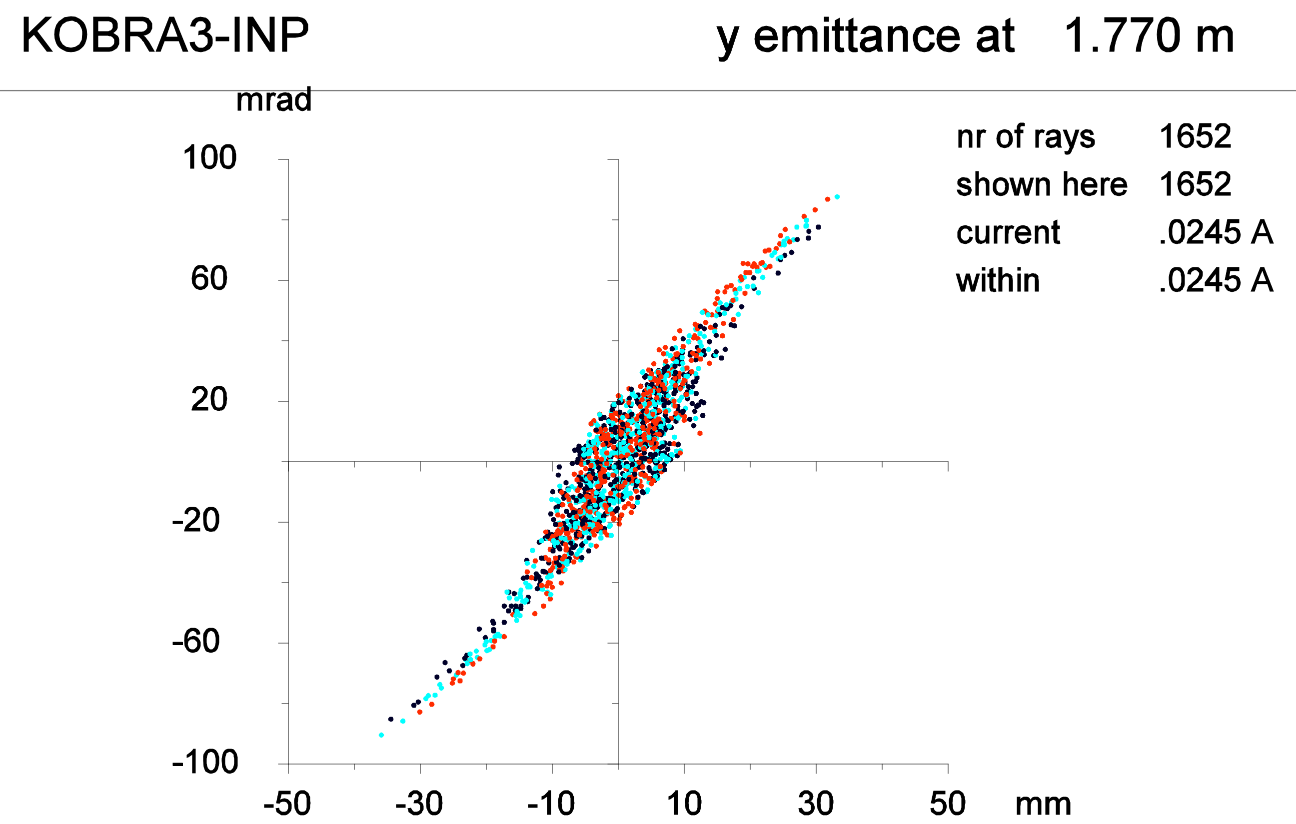
KOBRA3-INP y emittance at 1.740 m

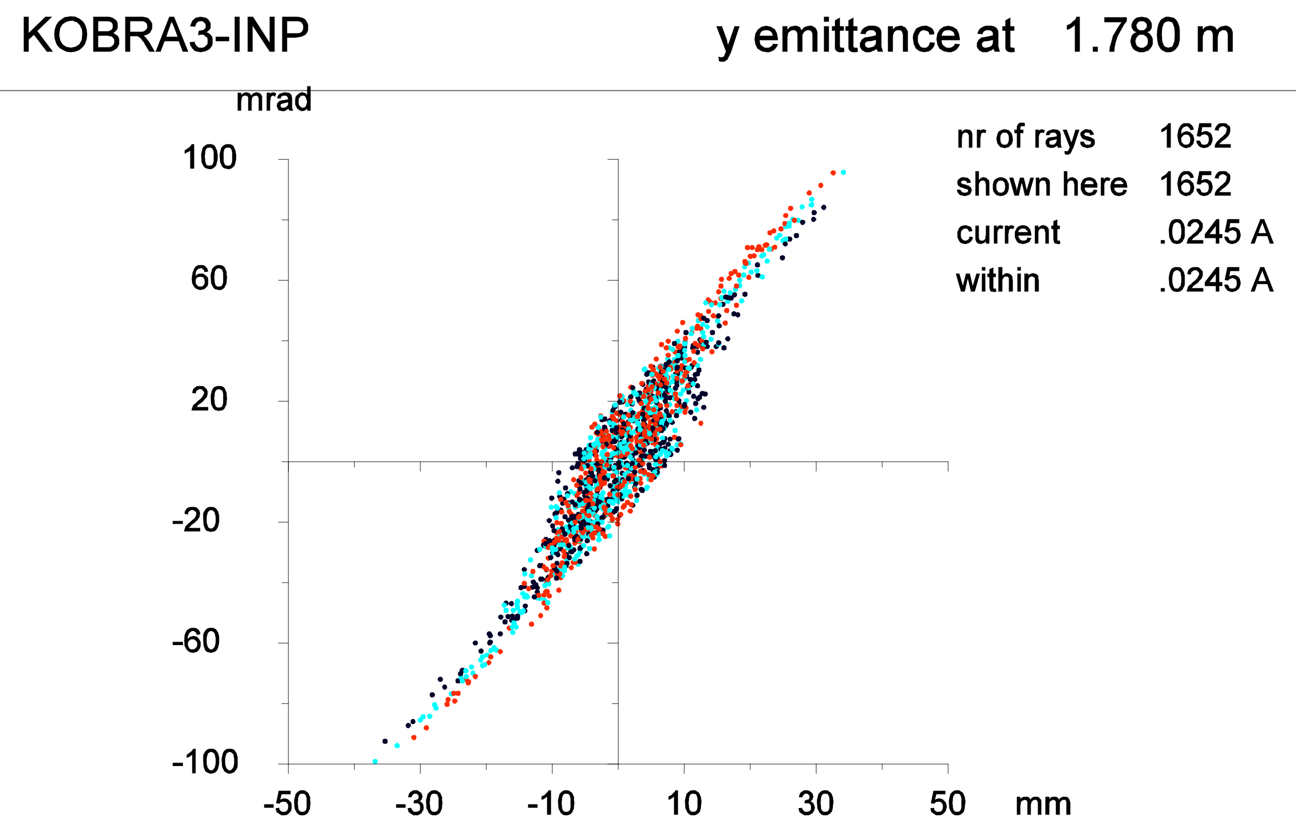


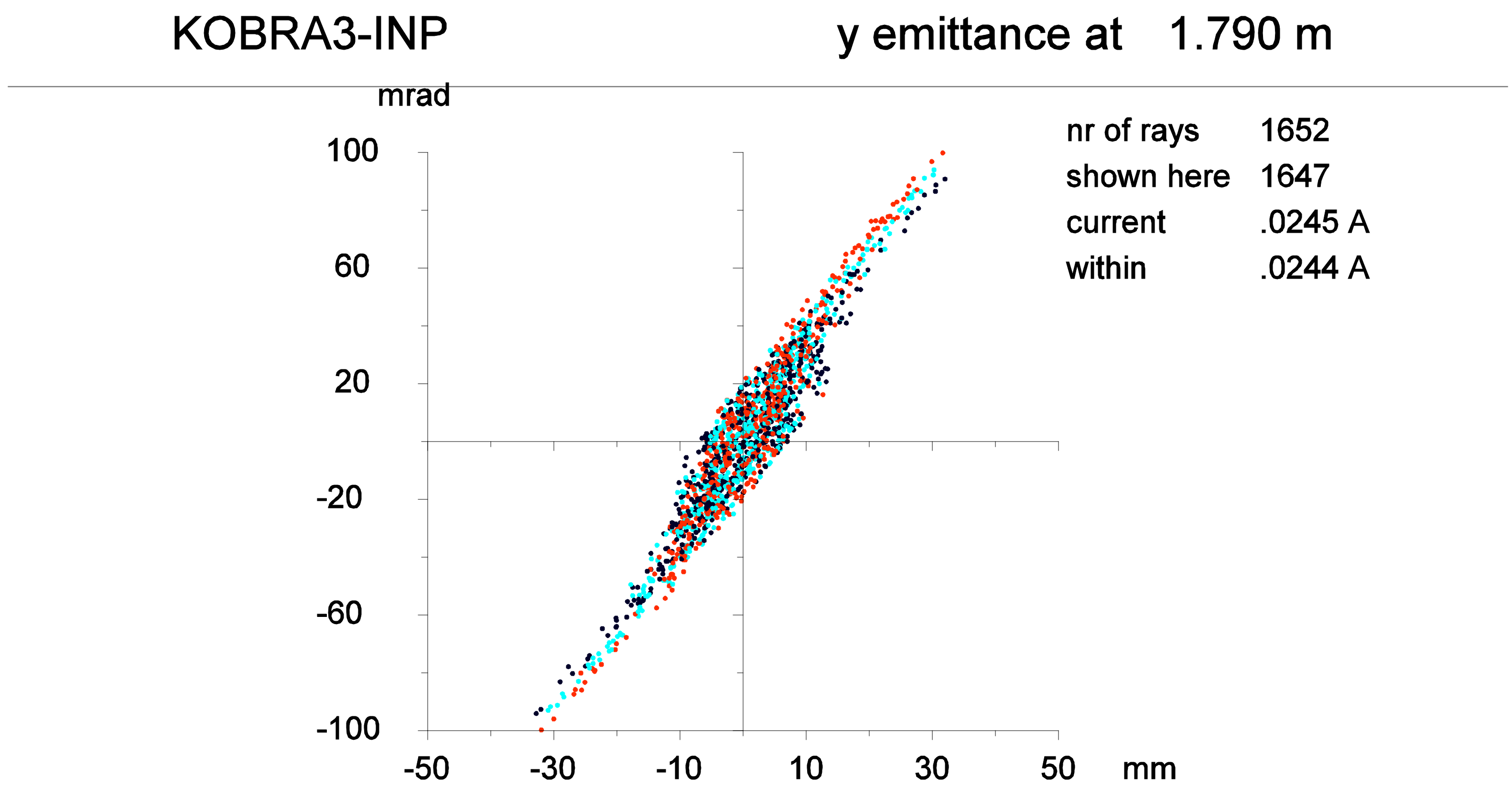


KOBRA3-INP
y emittance at 1.750 m
mrad
100
60
20
-20
-60
-100
-50
-30
-10
10
30
50
mm
nr of rays 1652
shown here 1652
current .0245 A
within .0245 A

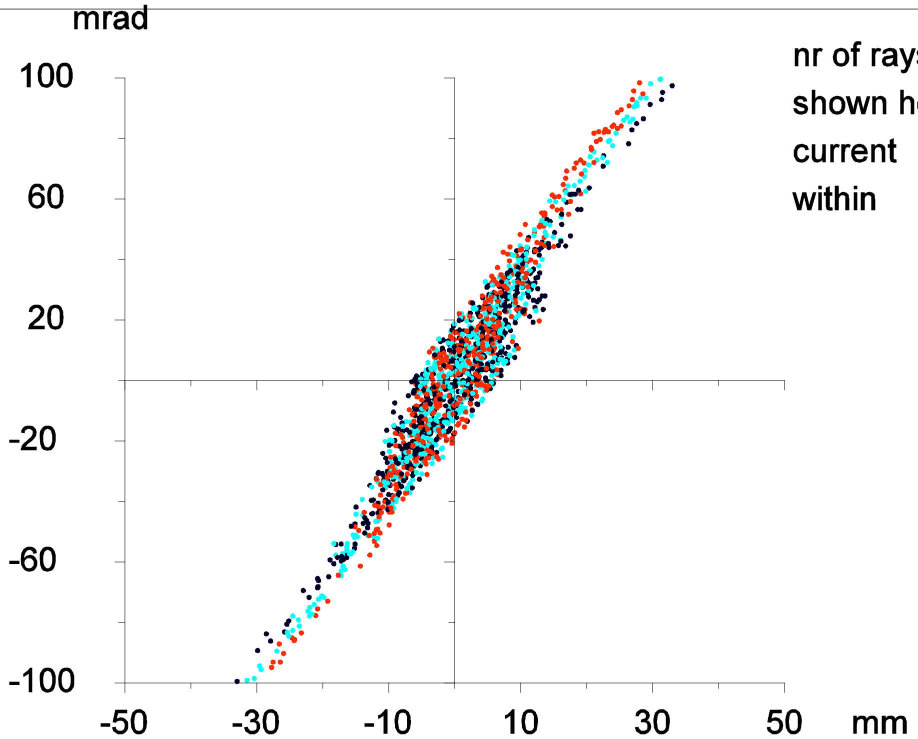

KOBRA3-INP
y emittance at 1.760 m
mrad
100
60
20
-20
-60
-100
-50
-30
-10
10
30
50
mm
nr of rays 1652
shown here 1652
current .0245 A
within .0245 A


KOBRA3-INP
y emittance at 1.770 m
mrad
100
60
20
-20
-60
-100
-50
-30
-10
10
30
50
mm
nr of rays 1652
shown here 1652
current .0245 A
within .0245 A


KOBRA3-INP
y emittance at 1.780 m
mrad
100
60
20
-20
-60
-100
-50
-30
-10
10
30
50
mm
nr of rays 1652
shown here 1652
current .0245 A
within .0245 A

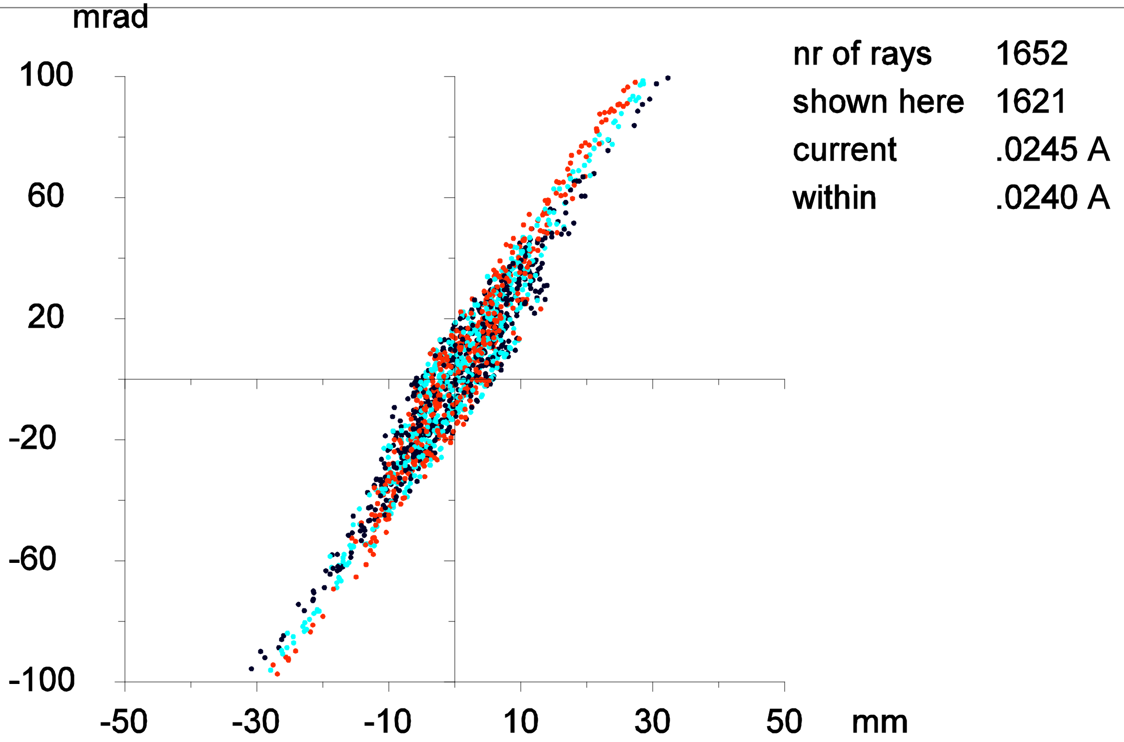

KOBRA3-INP
y emittance at 1.790 m
mrad
100
60
20
-20
-60
-100
-50
-30
-10
10
30
50
mm
nr of rays 1652
shown here 1647
current .0245 A
within .0244 A

KOBRA3-INP y emittance at 1.800 m

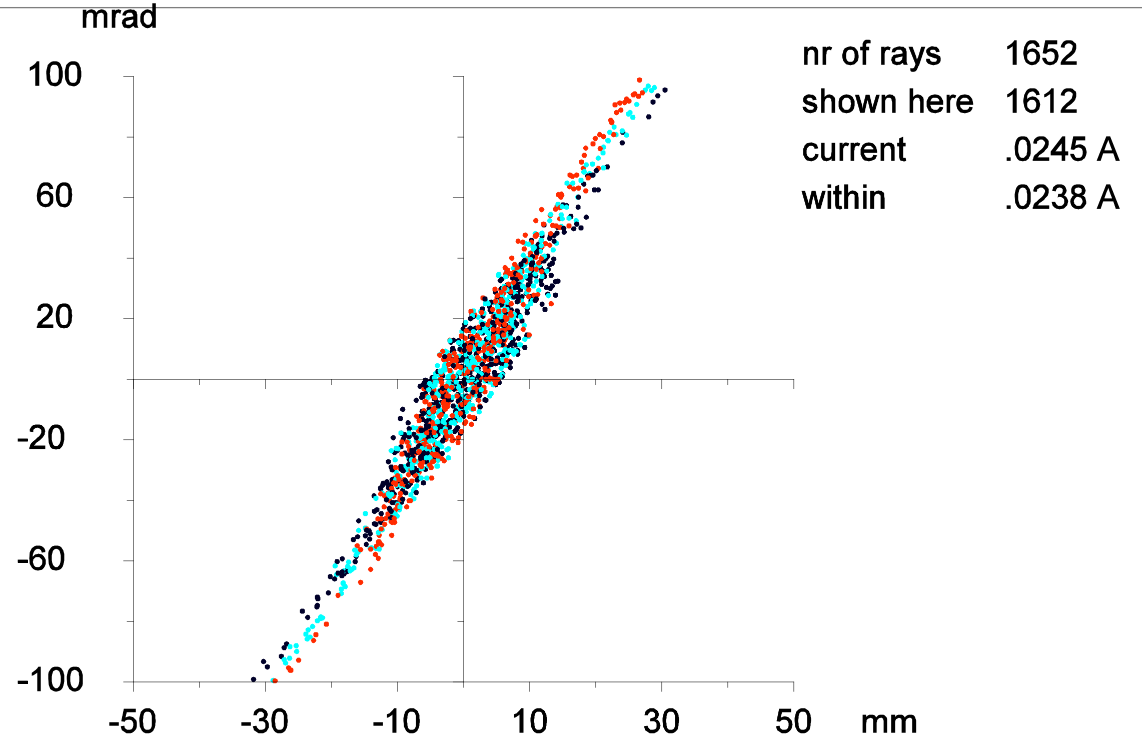


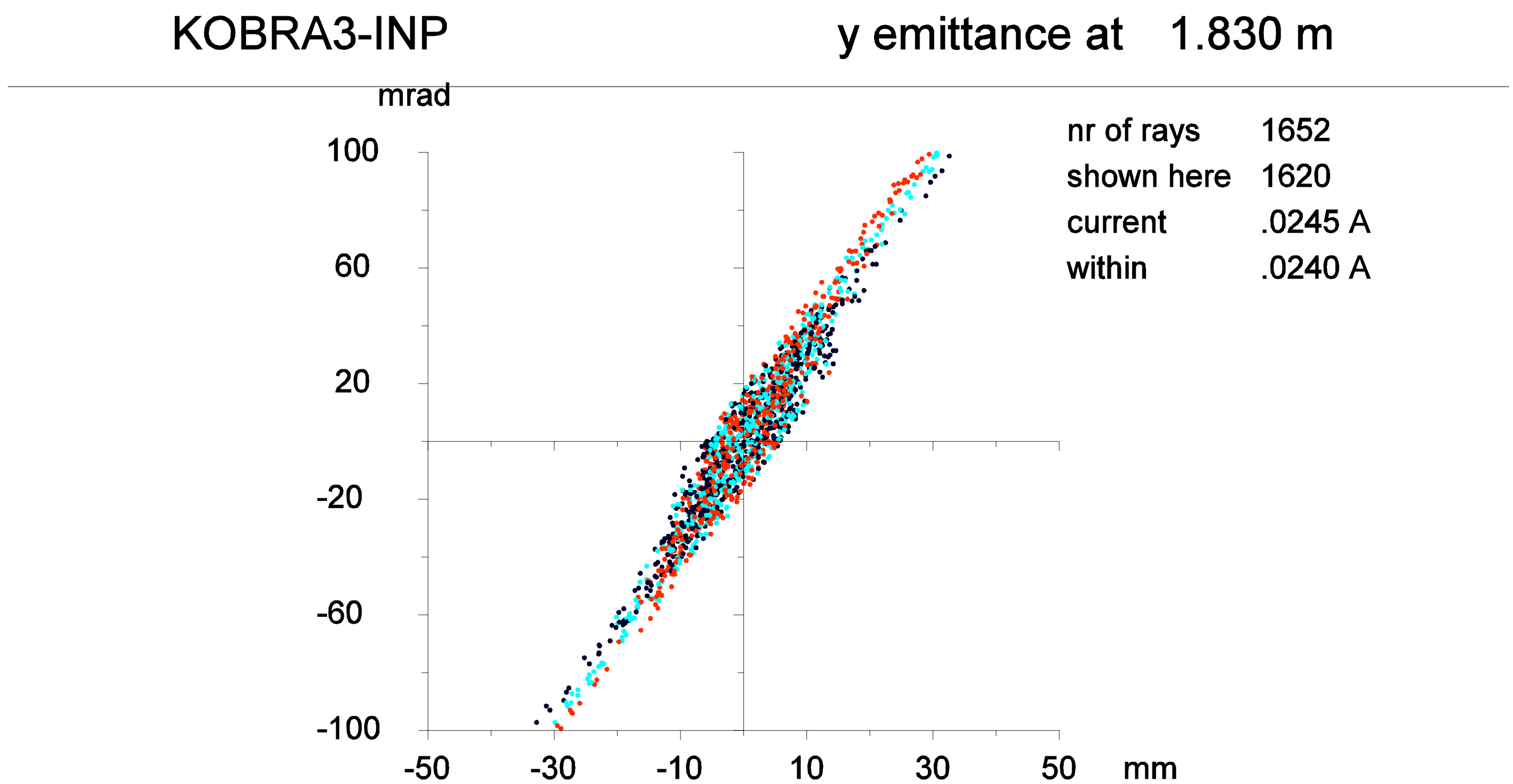
nr of rays	1652
shown here	1640
current	.0245 A
within	.0243 A

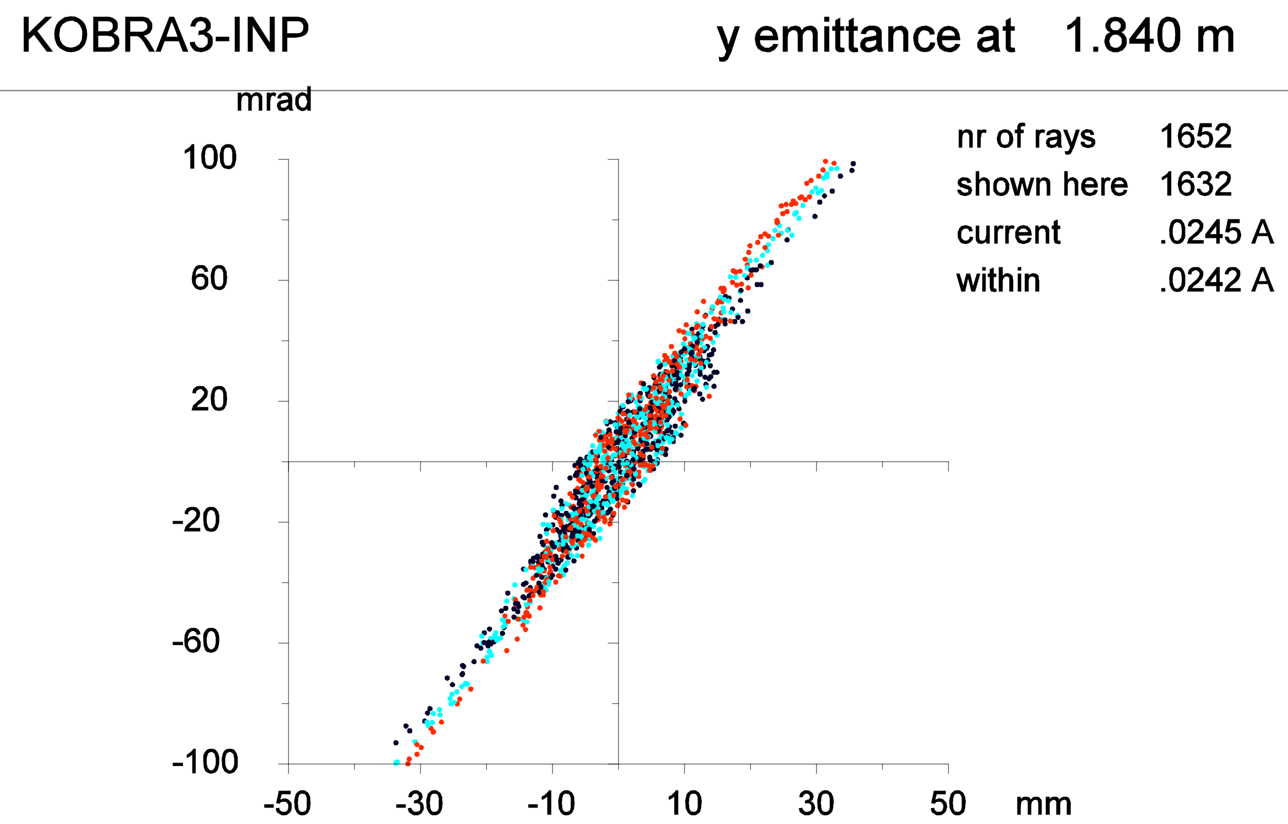
KOBRA3-INP   y emittance at 1.810 m



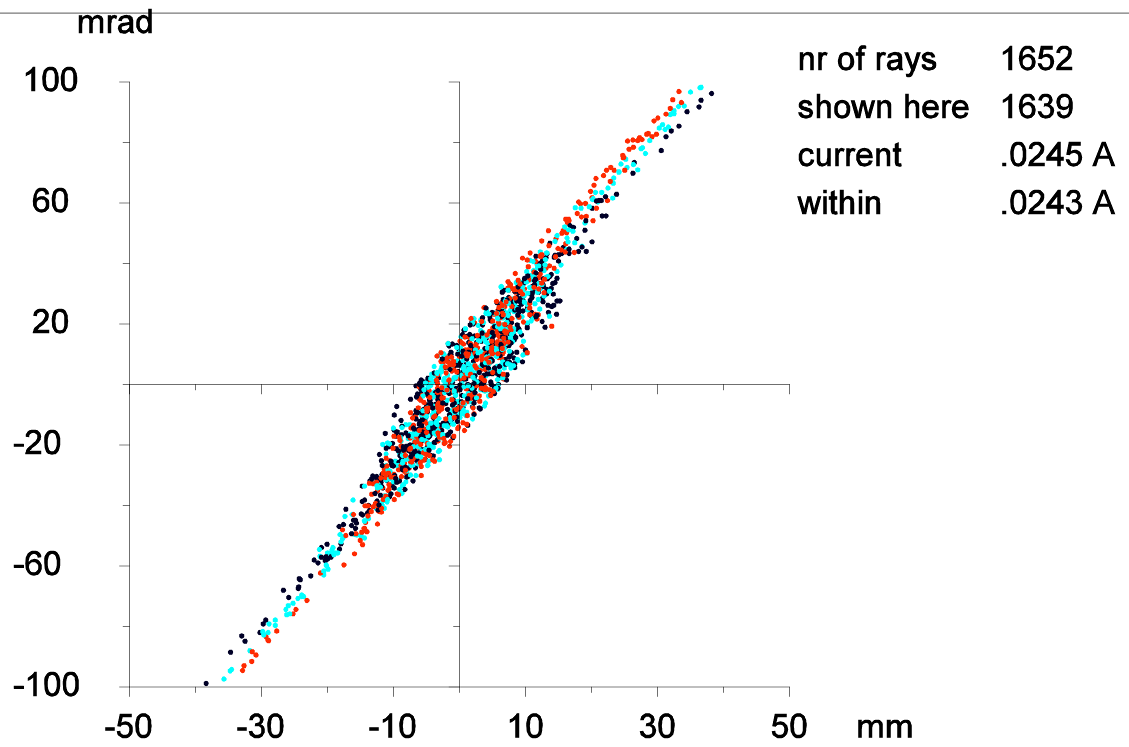
KOBRA3-INP y emittance at 1.820 m

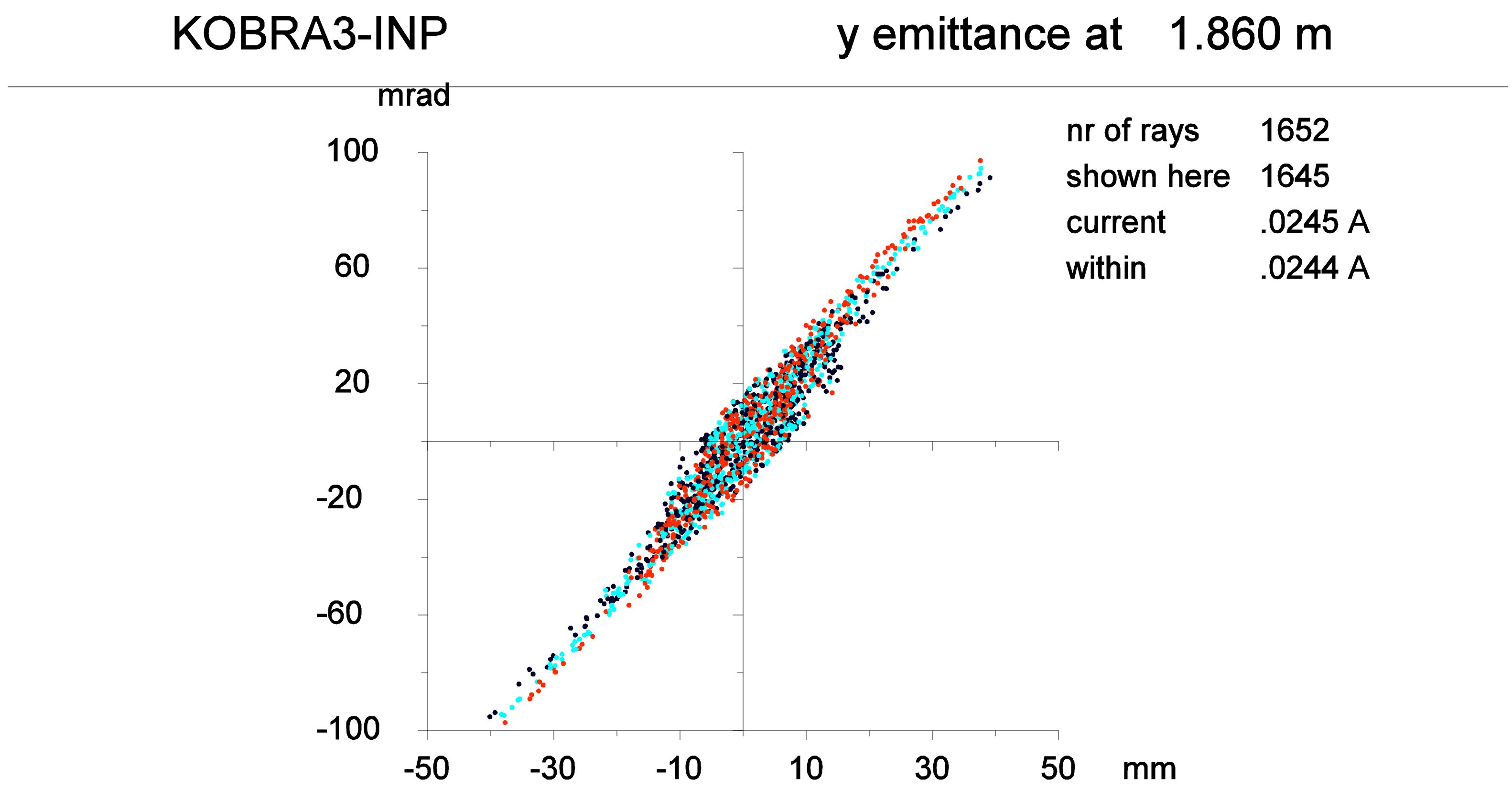


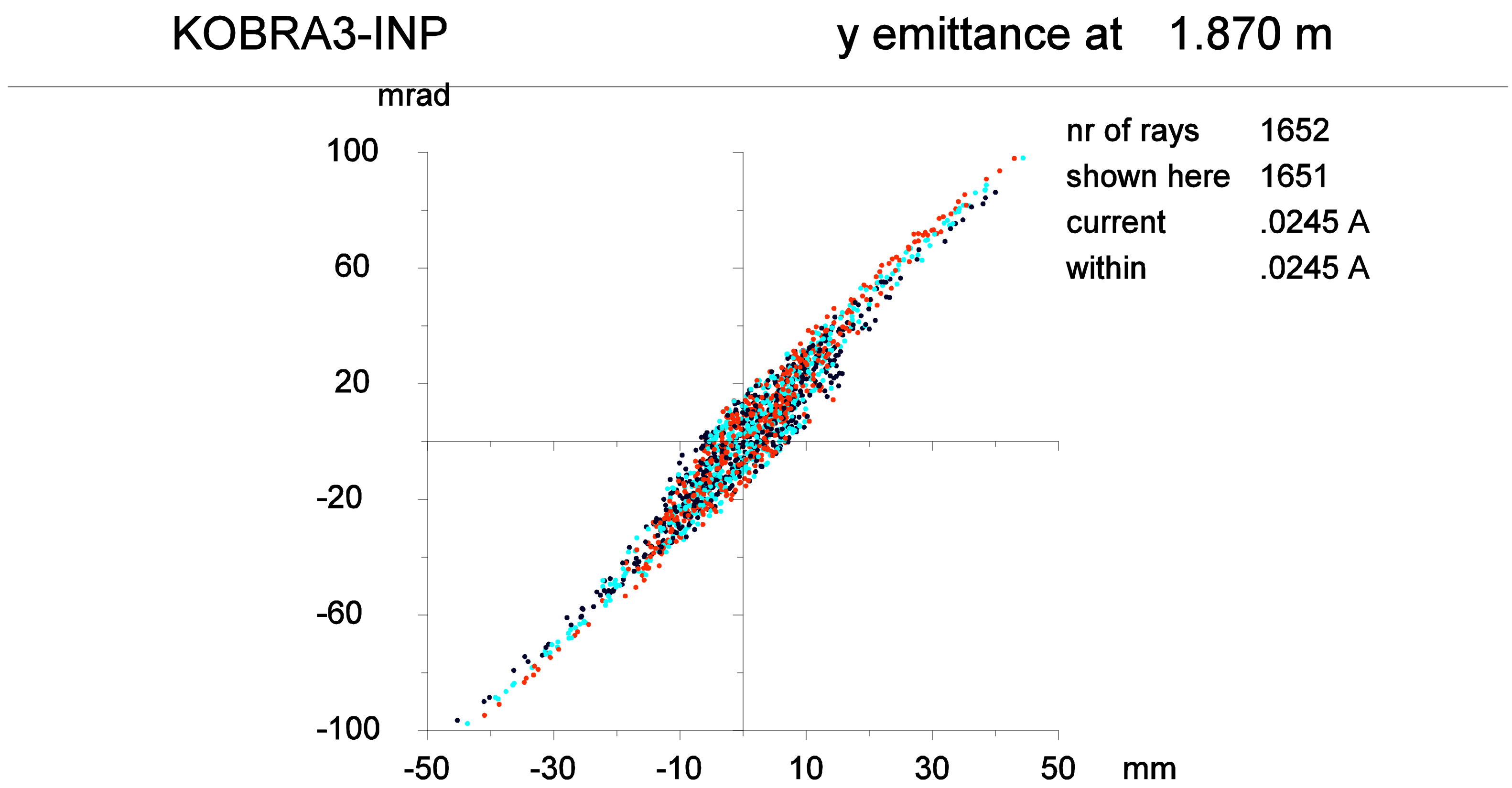

KOBRA3-INP
y emittance at 1.830 m
mrad
100
60
20
-20
-60
-100
-50
-30
-10
10
30
50
mm
nr of rays 1652
shown here 1620
current .0245 A
within .0240 A


KOBRA3-INP
y emittance at 1.840 m
mrad
nr of rays 1652
shown here 1632
current .0245 A
within .0242 A
100
60
20
-20
-60
-100
-50
-30
-10
10
30
50
mm

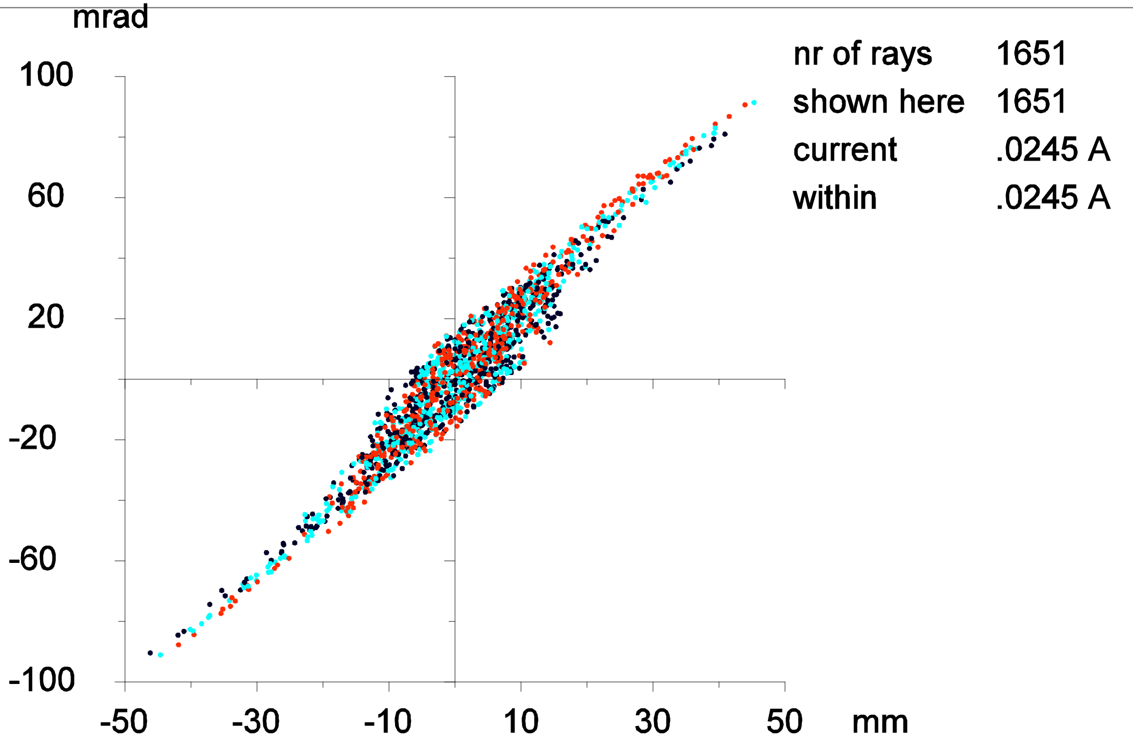
KOBRA3-INP y emittance at 1.850 m

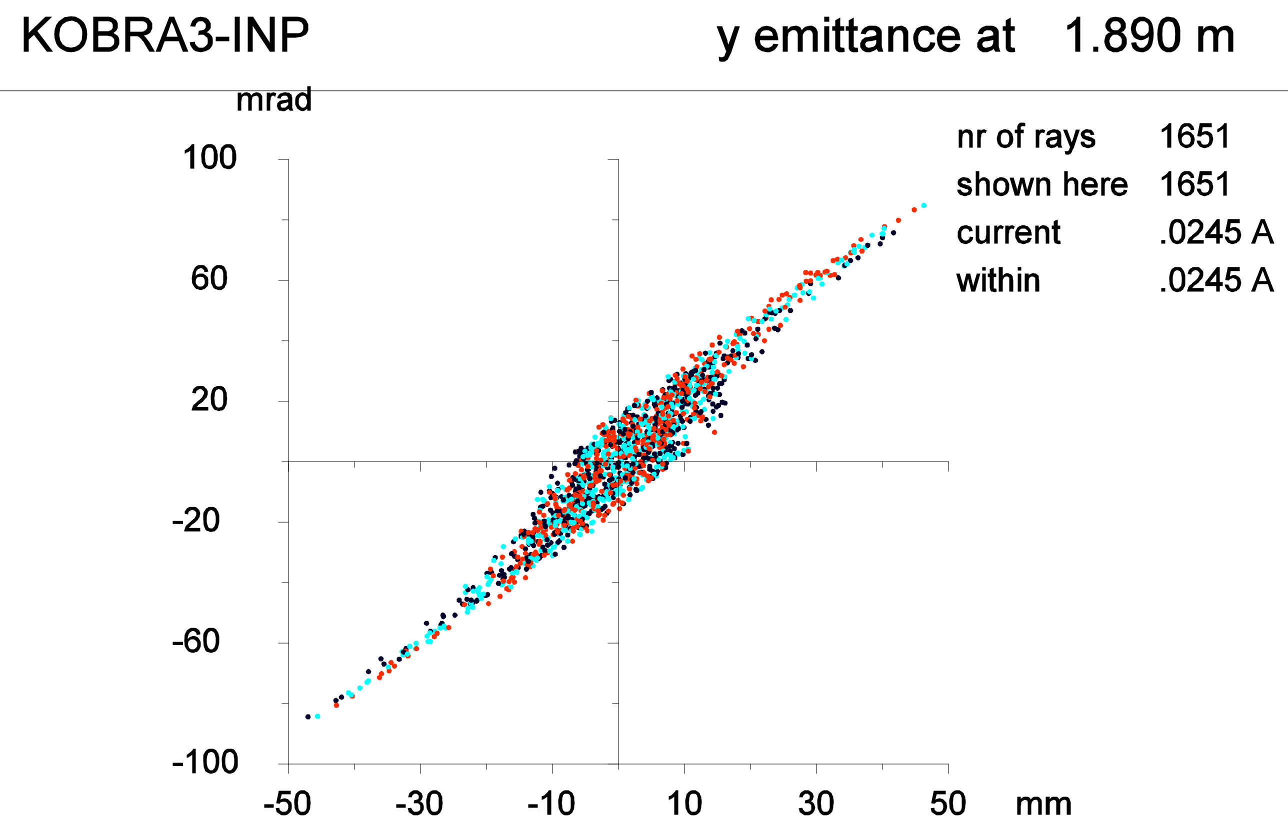



KOBRA3-INP
y emittance at 1.860 m
mrad
100
60
20
-20
-60
-100
-50
-30
-10
10
30
50
mm
nr of rays 1652
shown here 1645
current .0245 A
within .0244 A

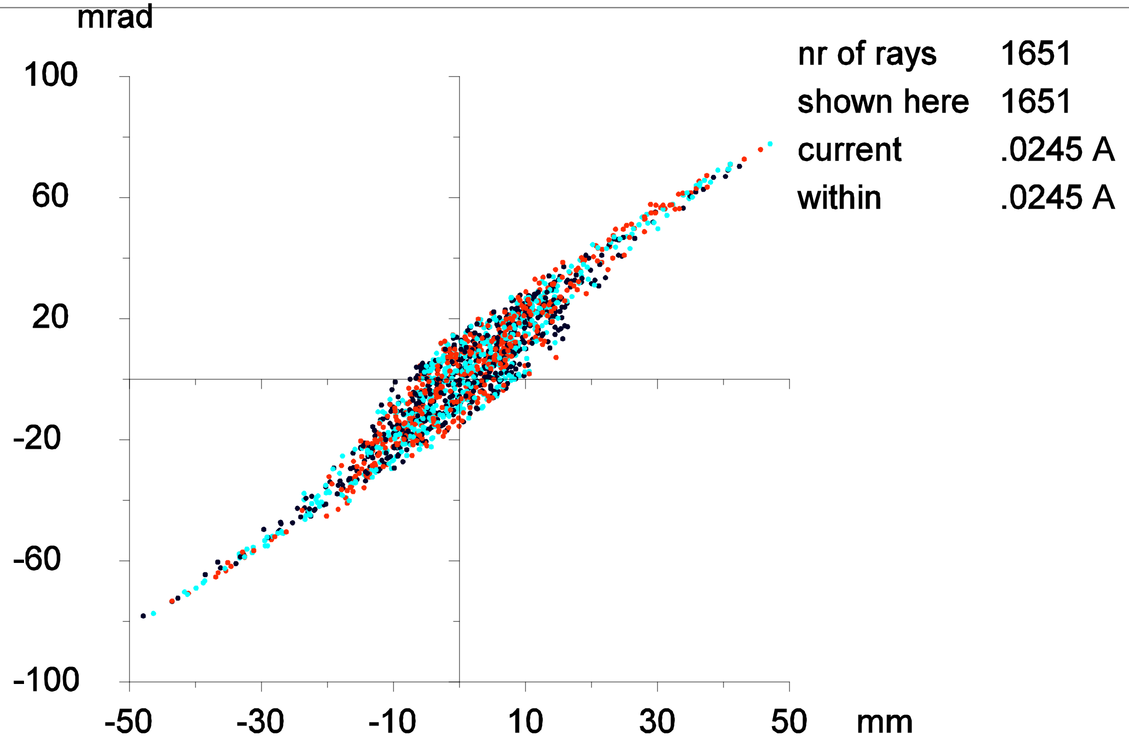

KOBRA3-INP
y emittance at 1.870 m
mrad
100
60
20
-20
-60
-100
-50
-30
-10
10
30
50
mm
nr of rays 1652
shown here 1651
current .0245 A
within .0245 A

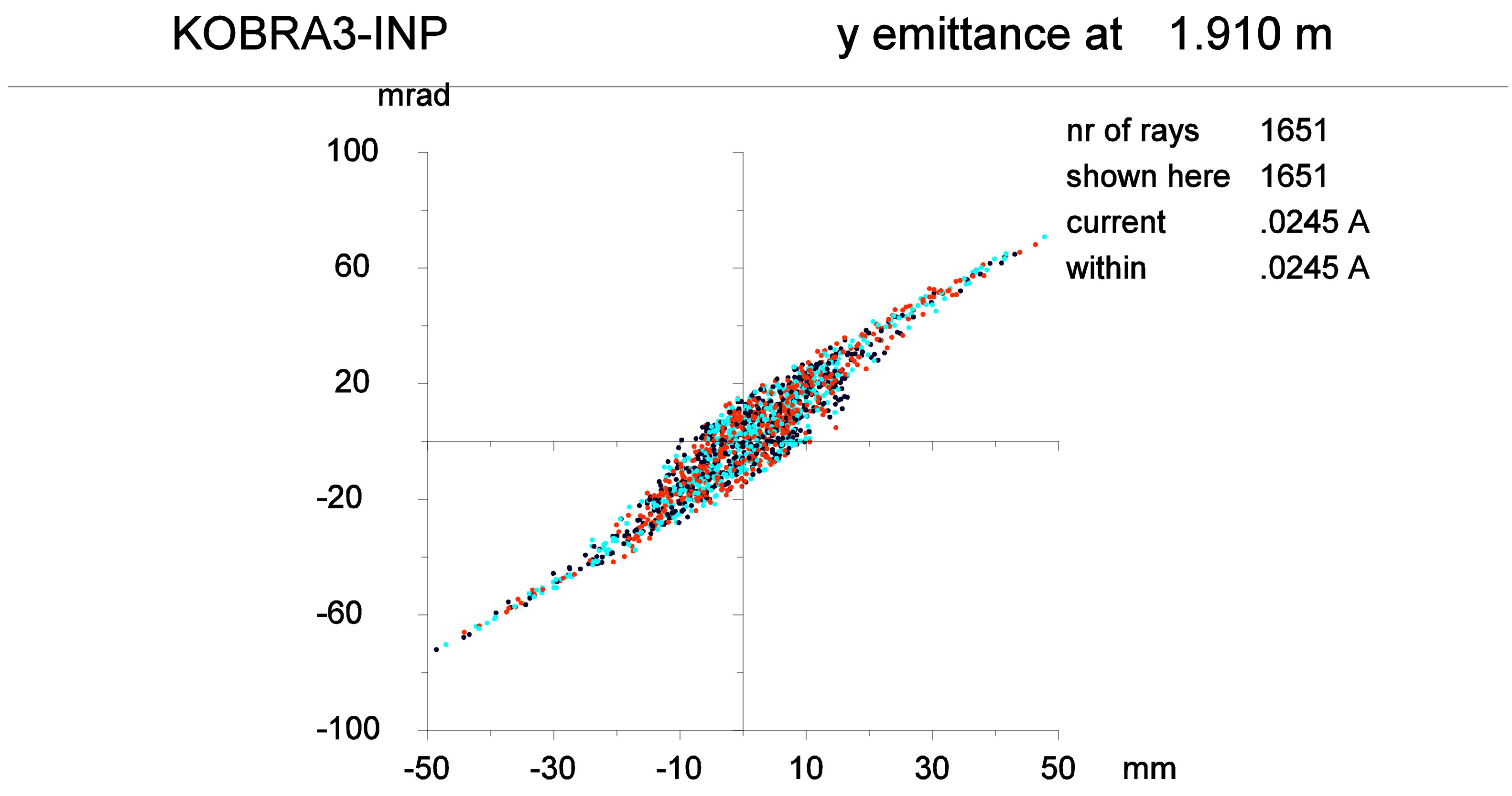
KOBRA3-INP y emittance at 1.880 m



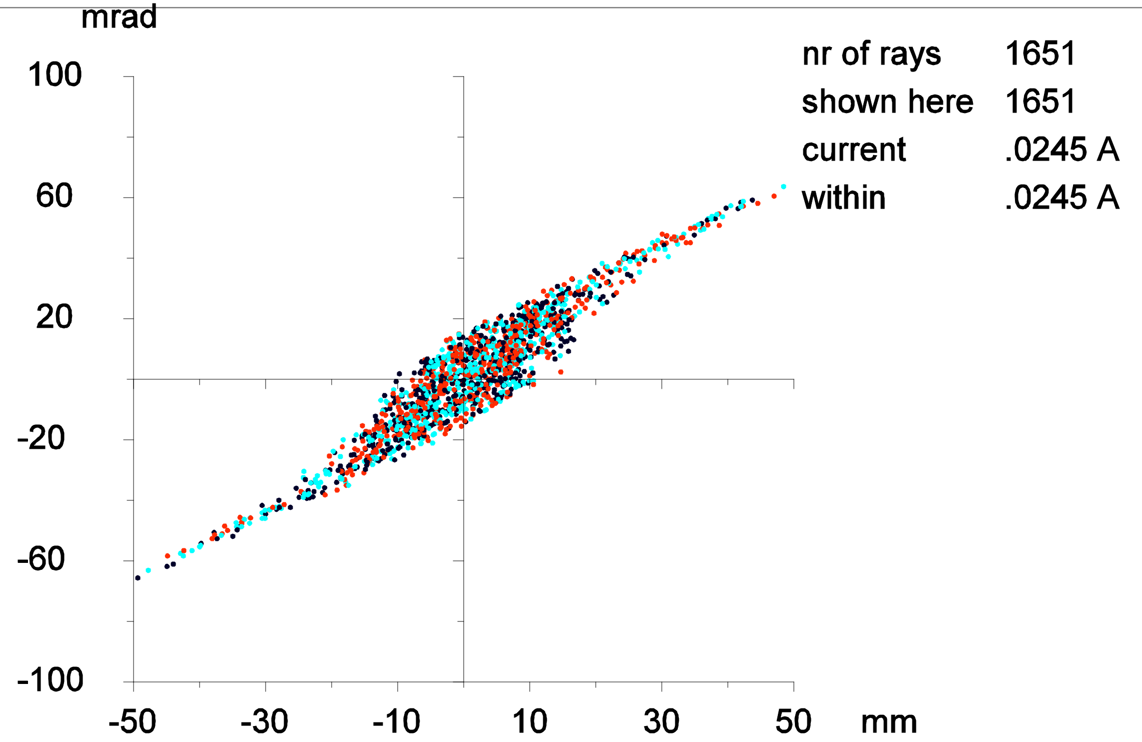

KOBRA3-INP
y emittance at 1.890 m
mrad
100
60
20
-20
-60
-100
-50
-30
-10
10
30
50
mm
nr of rays 1651
shown here 1651
current .0245 A
within .0245 A

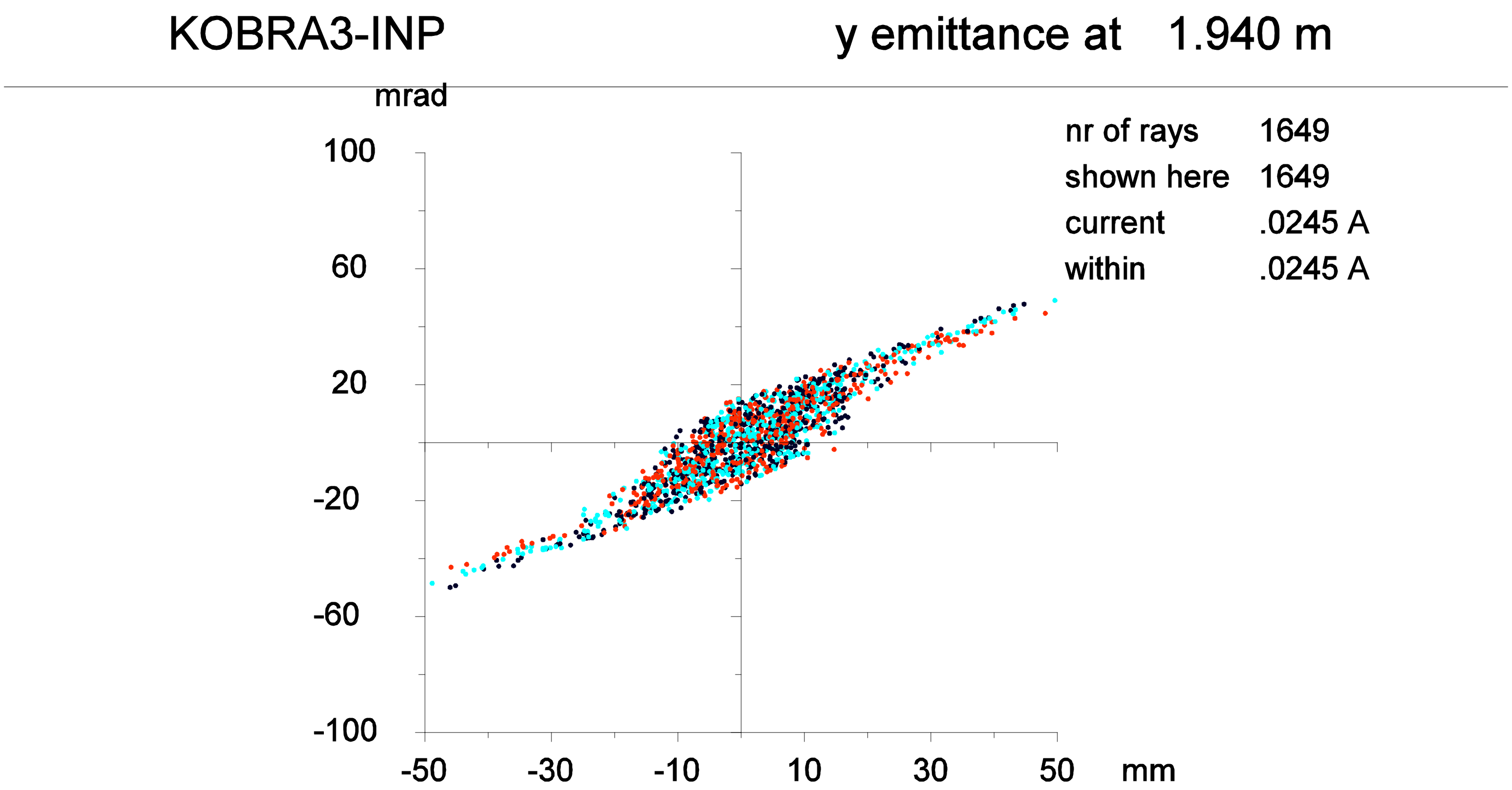
KOBRA3-INP y emittance at 1.900 m



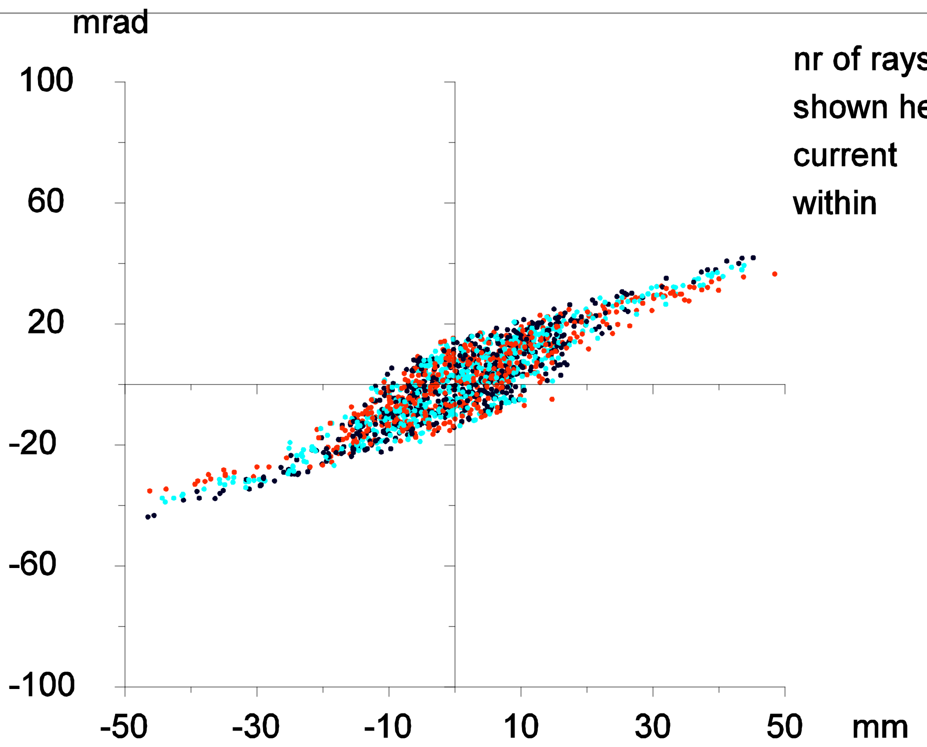

KOBRA3-INP
y emittance at 1.910 m
mrad
100
60
20
-20
-60
-100
-50
-30
-10
10
30
50
mm
nr of rays 1651
shown here 1651
current .0245 A
within .0245 A

KOBRA3-INP y emittance at 1.920 m

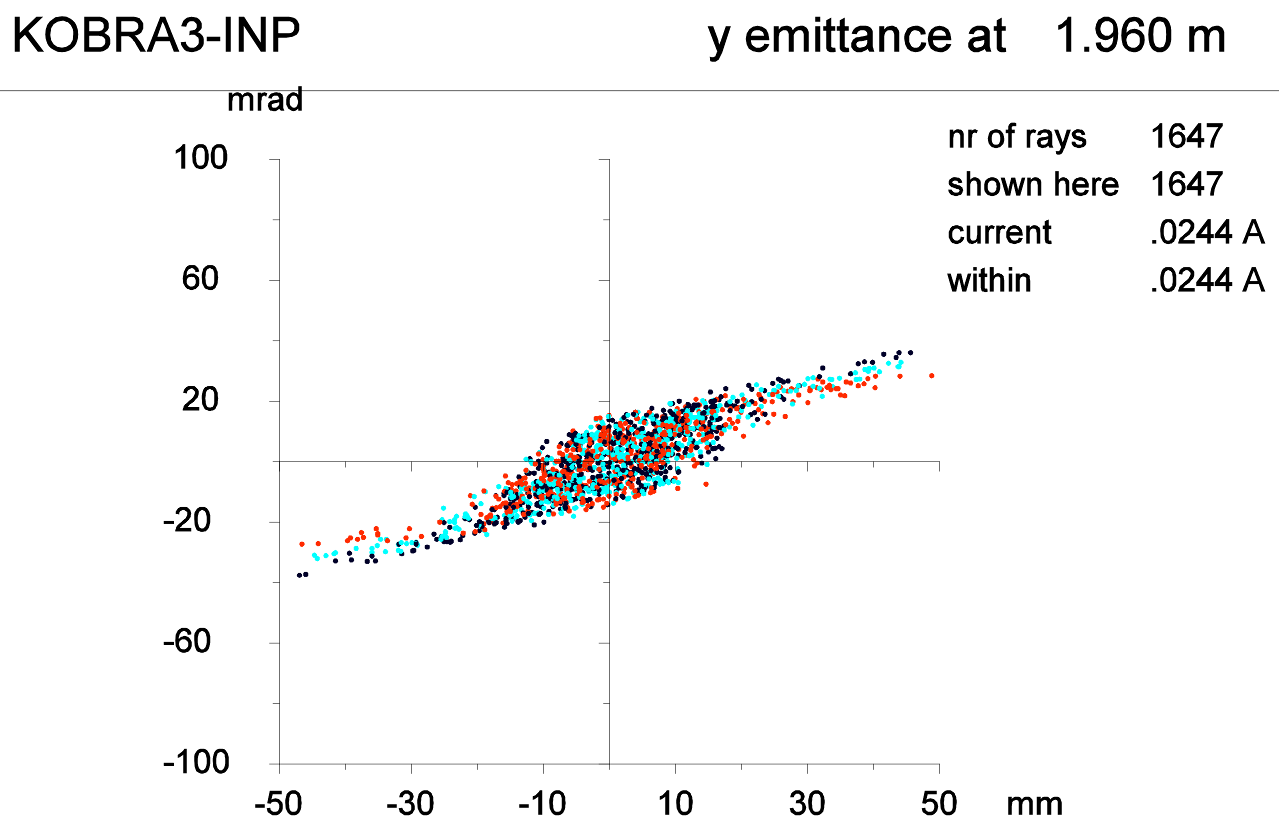


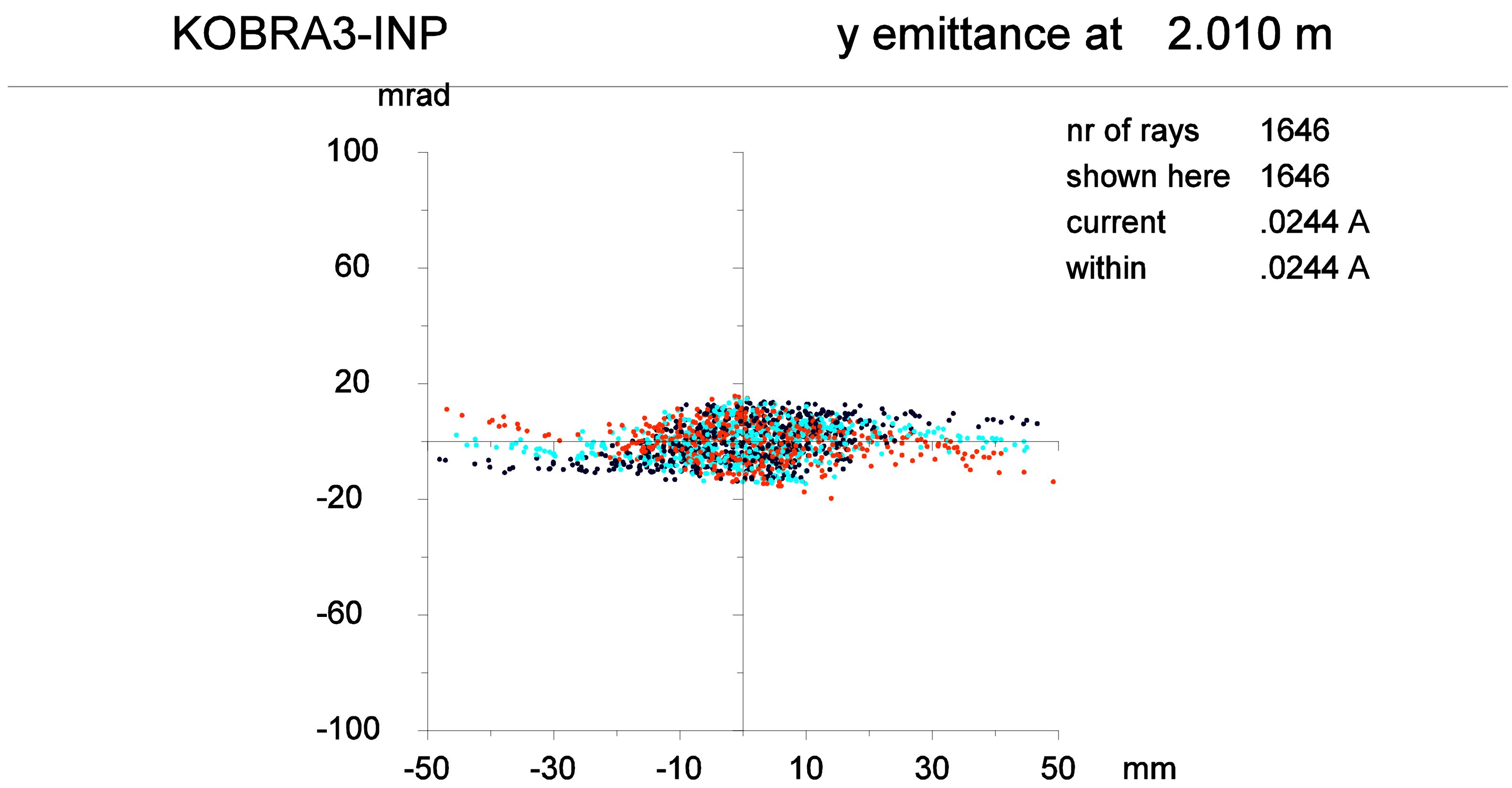

KOBRA3-INP
y emittance at 1.940 m
mrad
100
60
20
-20
-60
-100
-50
-30
-10
10
30
50
mm
nr of rays 1649
shown here 1649
current .0245 A
within .0245 A

KOBRA3-INP y emittance at 1.950 m

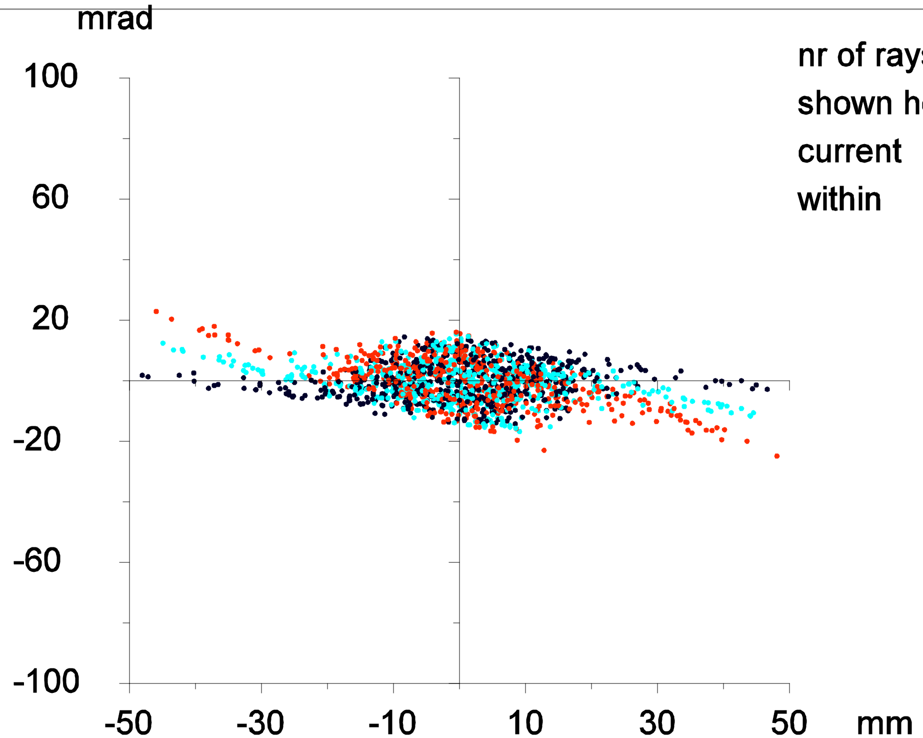


nr of rays 1647
shown here 1647
current .0244 A
within .0244 A

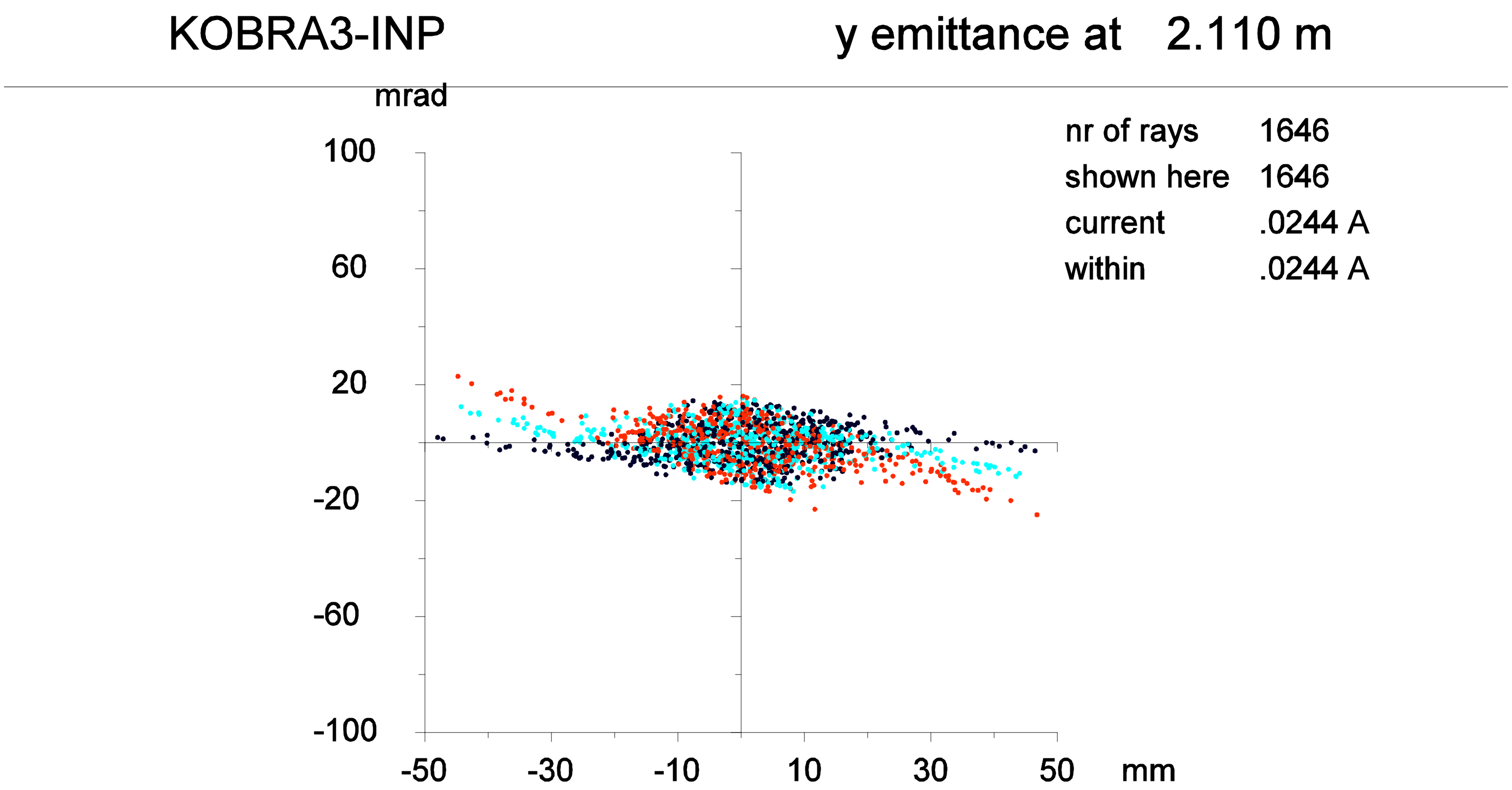

KOBRA3-INP
y emittance at 1.960 m
mrad
100
60
20
-20
-60
-100
-50
-30
-10
10
30
50
mm
nr of rays 1647
shown here 1647
current .0244 A
within .0244 A


KOBRA3-INP
y emittance at 2.010 m
mrad
100
60
20
-20
-60
-100
-50
-30
-10
10
30
50
mm
nr of rays 1646
shown here 1646
current .0244 A
within .0244 A

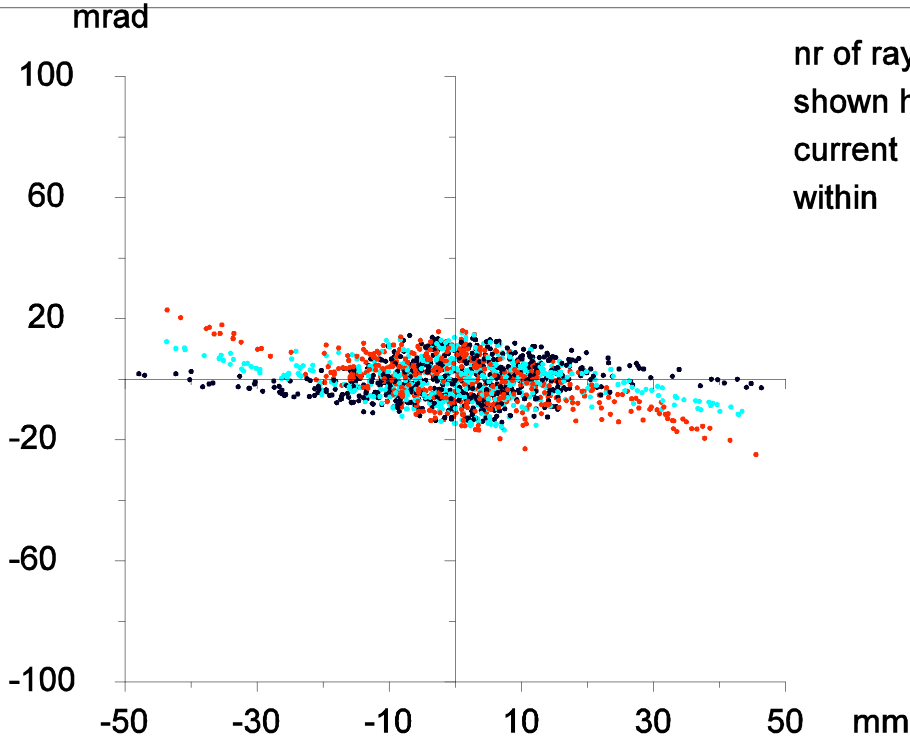
KOBRA3-INP   y emittance at   2.060 m



nr of rays	1646
shown here	1646
current	.0244 A
within	.0244 A

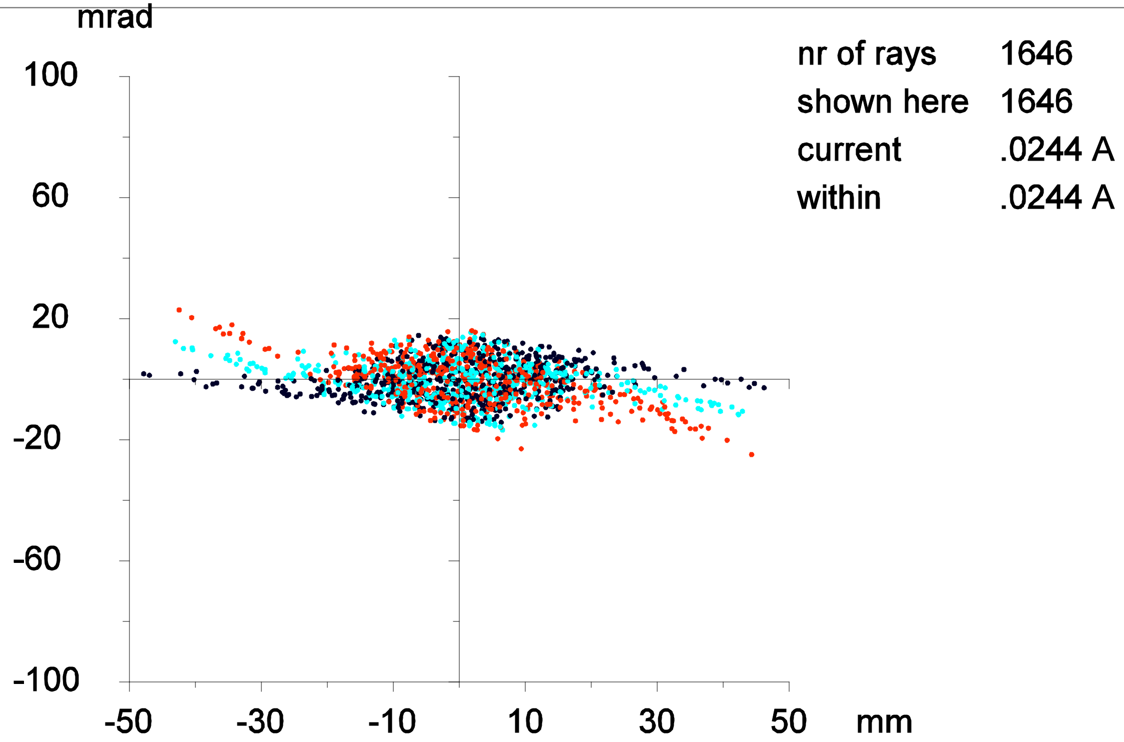

KOBRA3-INP
y emittance at 2.110 m
mrad
nr of rays 1646
shown here 1646
current .0244 A
within .0244 A
100
60
20
-20
-60
-100
-50
-30
-10
10
30
50
mm

KOBRA3-INP   y emittance at 2.160 m



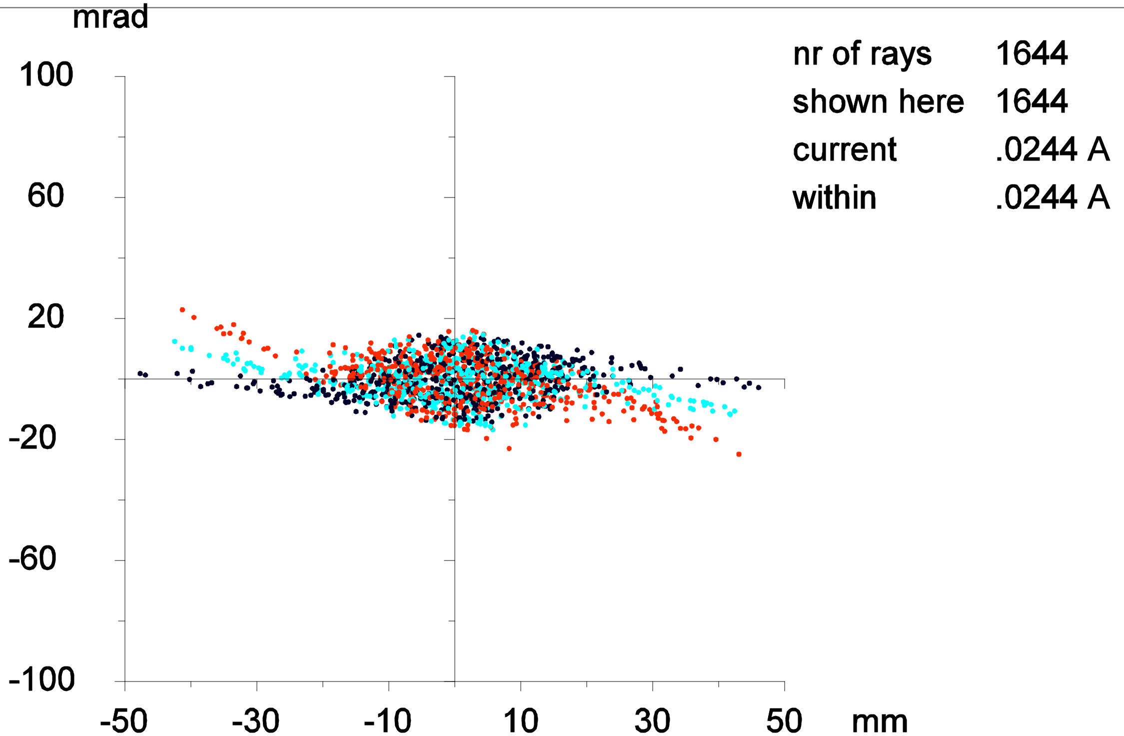
nr of rays	1646
shown here	1646
current	.0244 A
within	.0244 A

KOBRA3-INP y emittance at 2.210 m

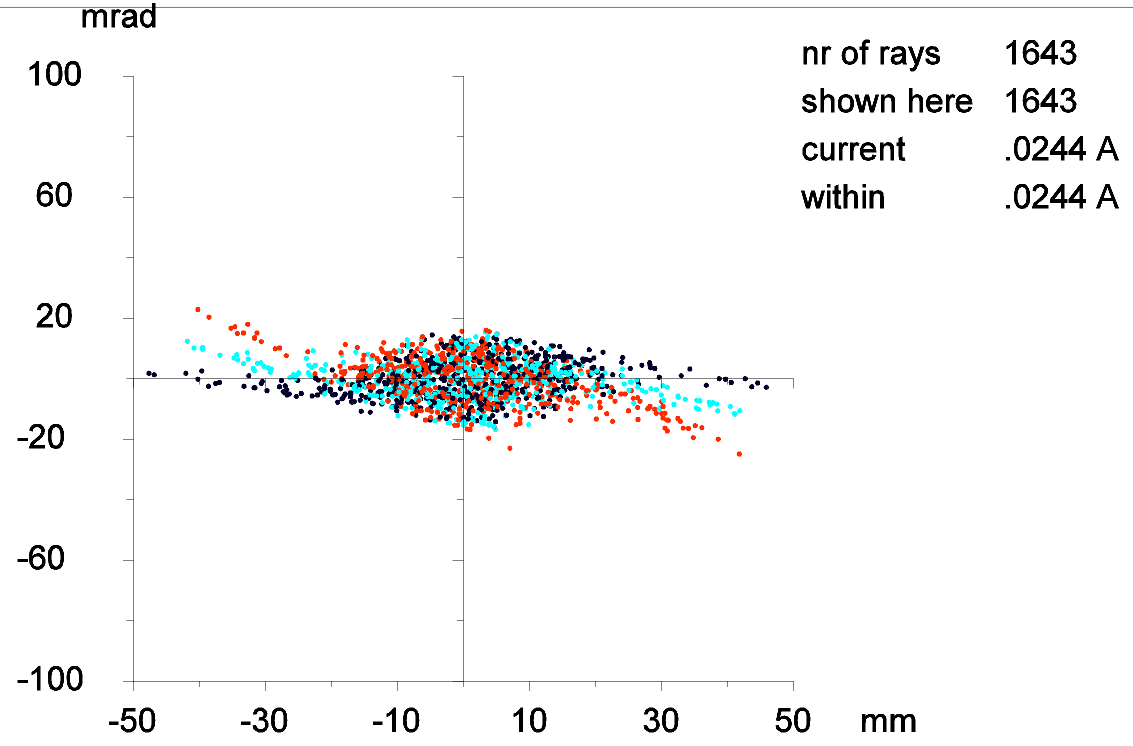


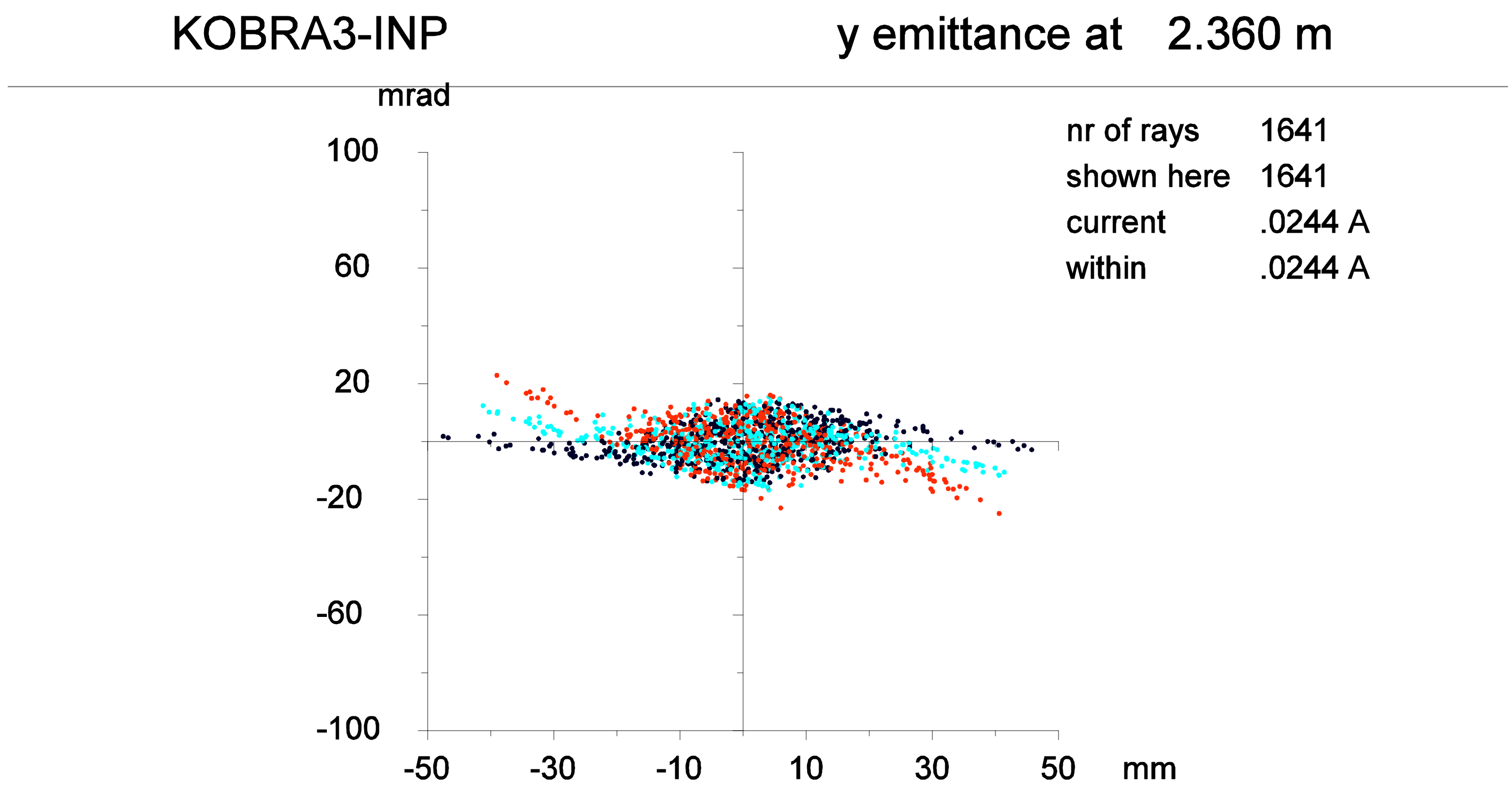
KOBRA3-INP

y emittance at 2.260 m

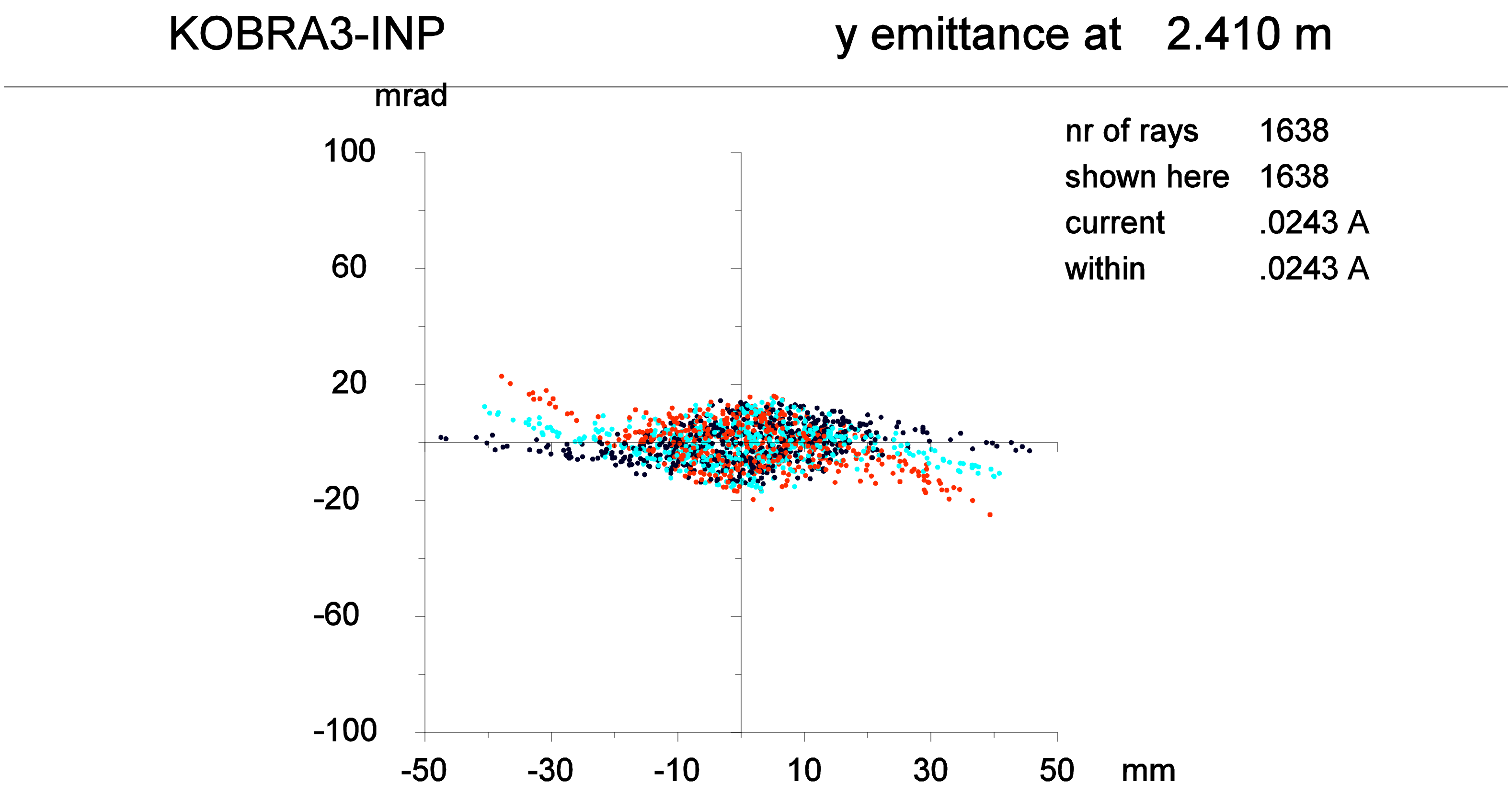


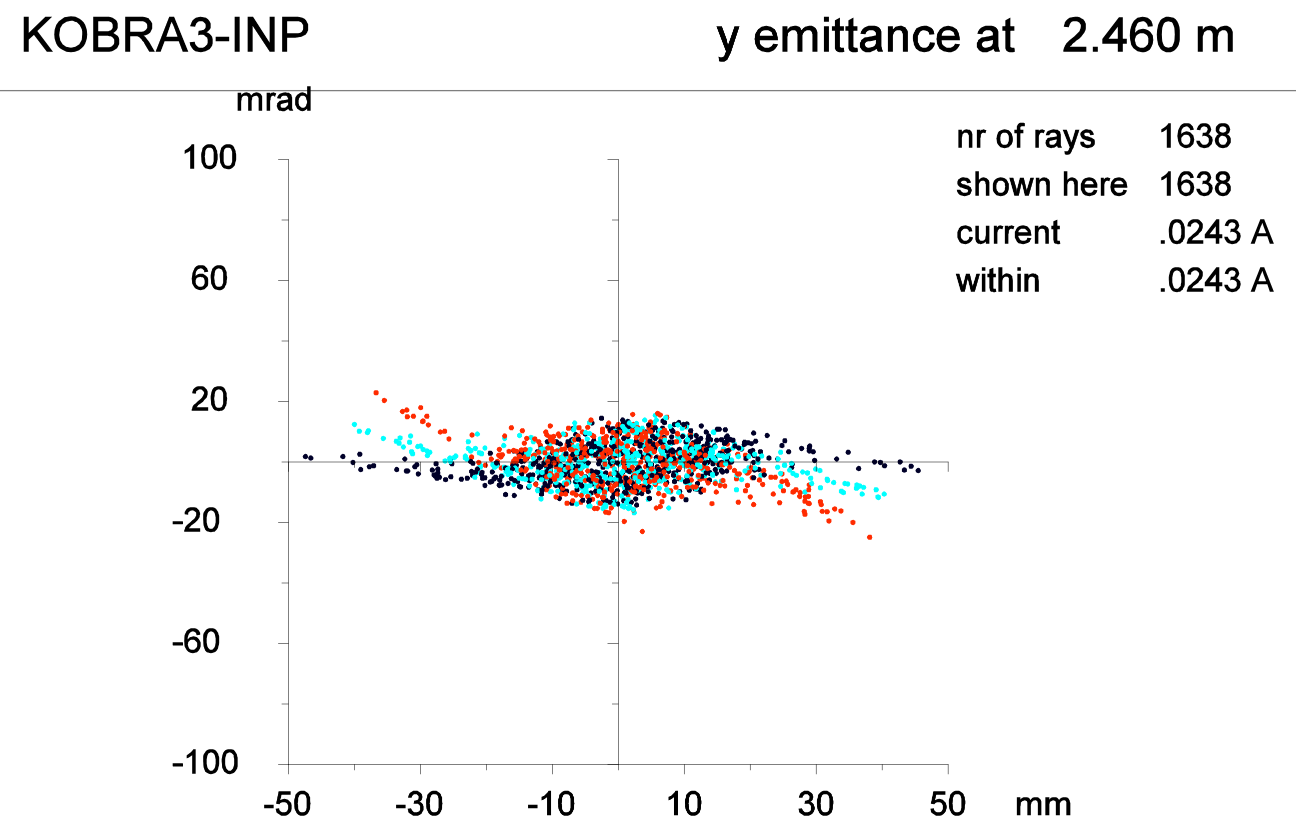
KOBRA3-INP y emittance at 2.310 m

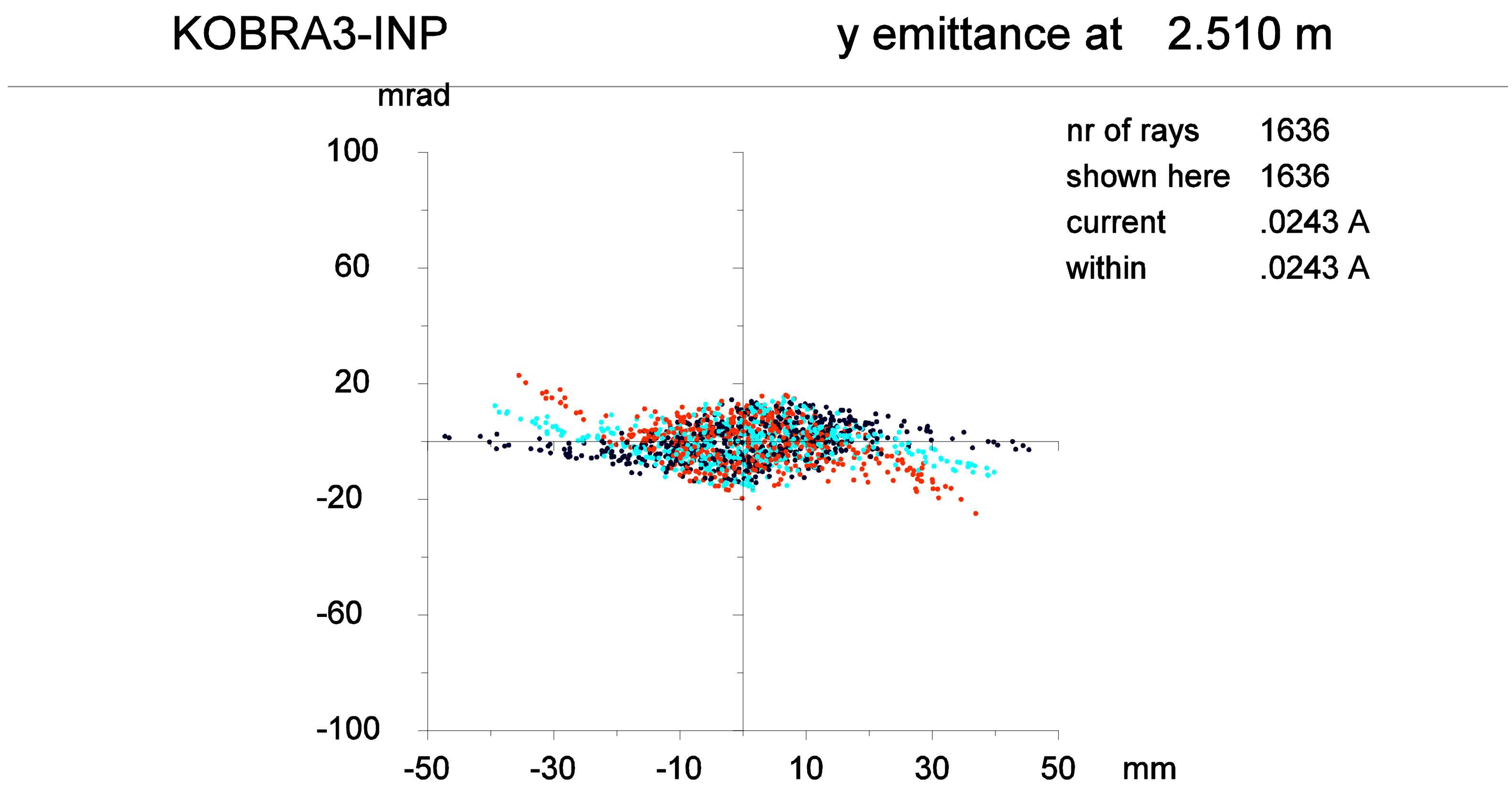




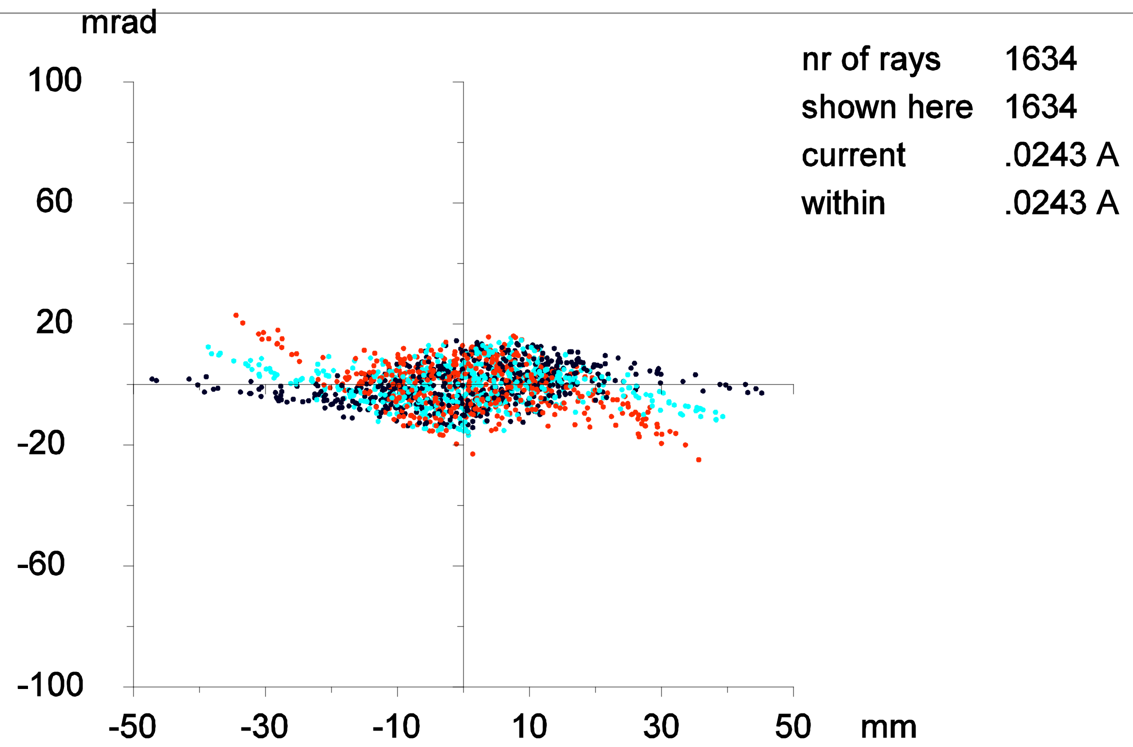
KOBRA3-INP
y emittance at 2.360 m
mrad
nr of rays 1641
shown here 1641
current .0244 A
within .0244 A
100
60
20
-20
-60
-100
-50
-30
-10
10
30
50
mm


KOBRA3-INP
y emittance at 2.410 m
mrad
100
60
20
-20
-60
-100
-50
-30
-10
10
30
50
mm
nr of rays 1638
shown here 1638
current .0243 A
within .0243 A

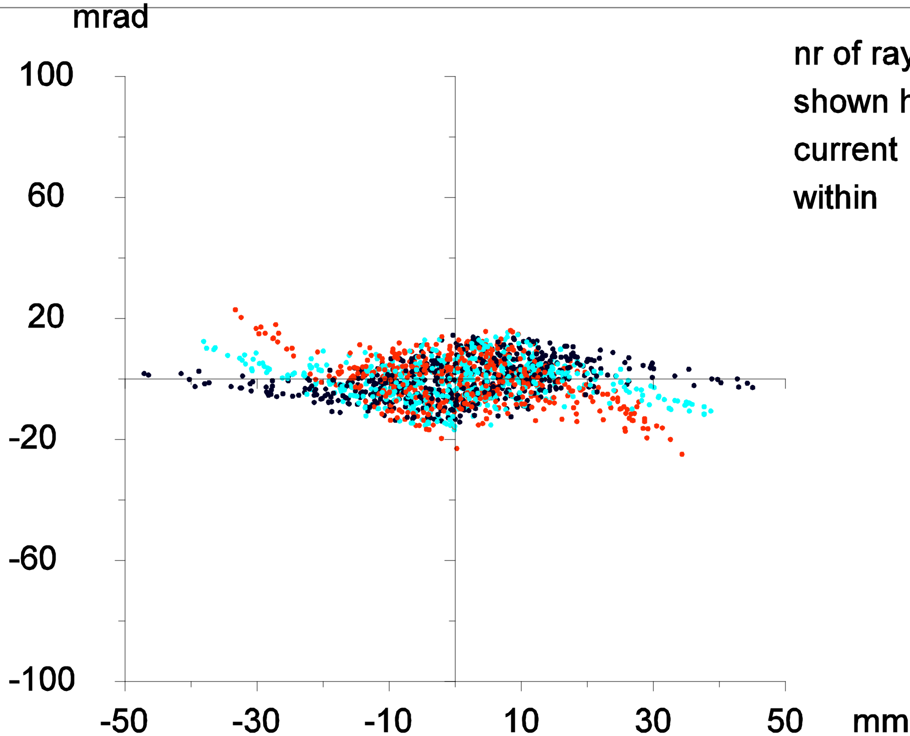

KOBRA3-INP
y emittance at 2.460 m
mrad
100
60
20
-20
-60
-100
-50
-30
-10
10
30
50
mm
nr of rays 1638
shown here 1638
current .0243 A
within .0243 A


KOBRA3-INP
y emittance at 2.510 m
mrad
100
60
20
-20
-60
-100
-50
-30
-10
10
30
50
mm
nr of rays 1636
shown here 1636
current .0243 A
within .0243 A

KOBRA3-INP y emittance at 2.560 m



KOBRA3-INP y emittance at 2.610 m



nr of rays	1634
shown here	1634
current	.0243 A
within	.0243 A

ECR Quelle

Hauptunterschied zu den Hochstromionenquellen ist das Magnetfeld

Das Magnetfeld ist einerseits dafür notwendig, um die hohen Ladungszustände zu erzeugen, andererseits beeinflußt es die Plasmadichte im Ort

Mit zunehmender Magnetfeldstärke werden auch die extrahierten Ionen beeinflußt.

Um den Einfluß des Magnetfeldes zu minimieren haben bereits die ersten ECR Quellen eine Extraktionselektrode mit Pierce-Winkel, um radiale elektrische Felder zu minimieren.

ECR Quelle

Startenergie der Ionen im Bereich von einigen eV.

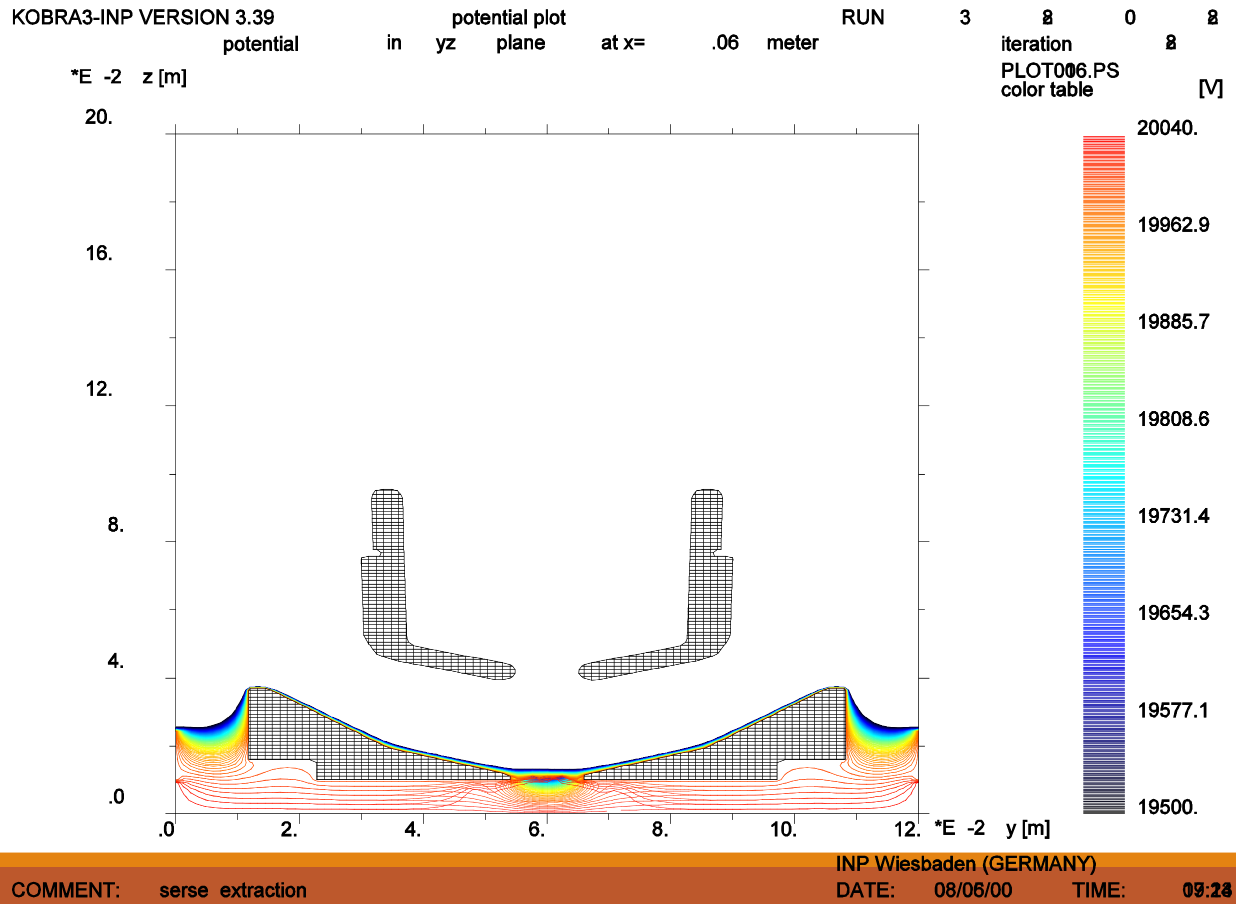
Die Ladungsverteilung entspricht der experimentell gemessenen

ECR Quelle

Solange der gesamte extrahierte Strom unterhalb einer Grenze bleibt, wird typischerweise ein Zweielektrodensystem (Diode) verwendet

Nach der Extraktion ist der Strahl nur partiell kompensiert, da die Strahlelektronen in die Quelle abgesaugt werden.

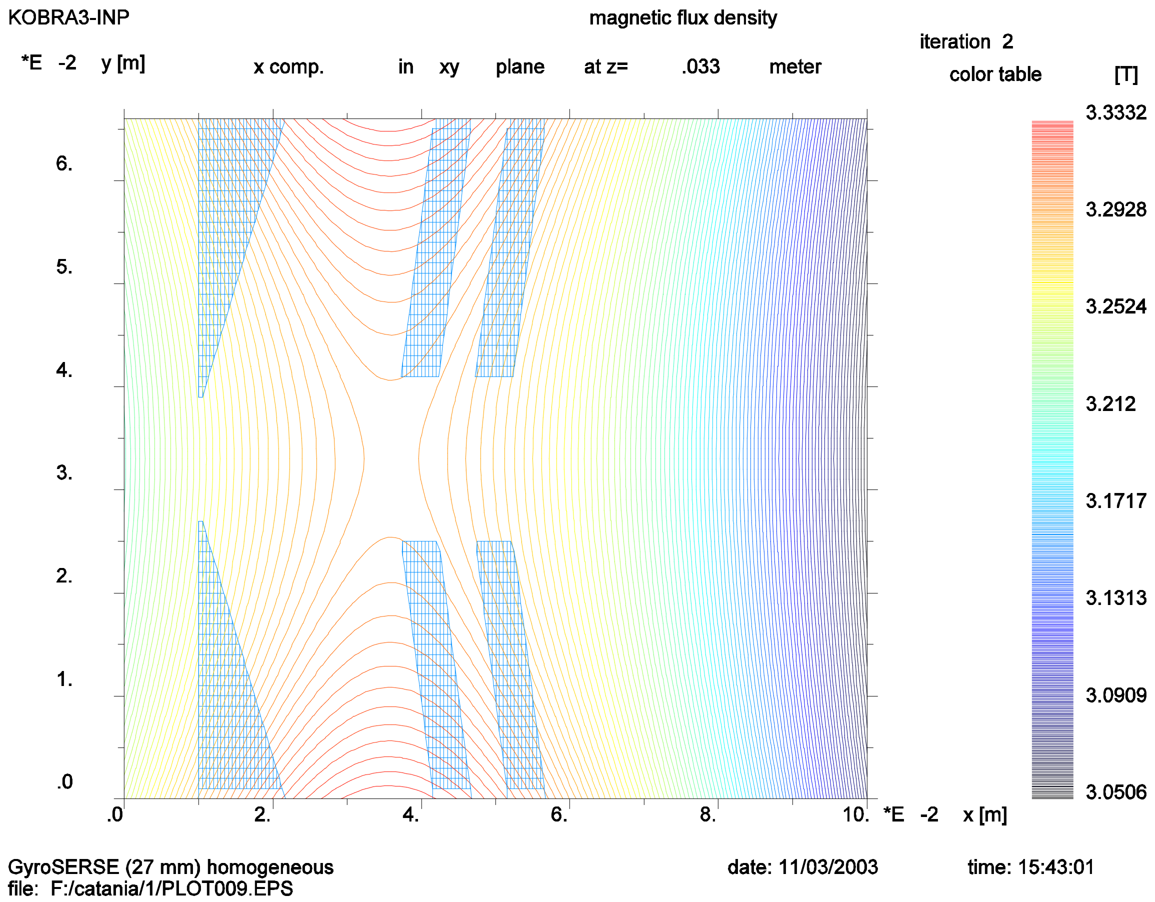
ECR Quelle


KOBRA3-INP VERSION 3.39
potential plot
RUN 3
potential in yz plane at x= .06 meter
iteration
*E -2 z [m]
color table [V]
20040.
19962.9
19885.7
19808.6
19731.4
19654.3
19577.1
19500.
20.
16.
12.
8.
4.
.0
.0
2.
4.
6.
8.
10.
12.
*E -2 y [m]
INP Wiesbaden (GERMANY)
COMMENT: serse extraction
DATE: 08/06/00 TIME:

ECR Quelle

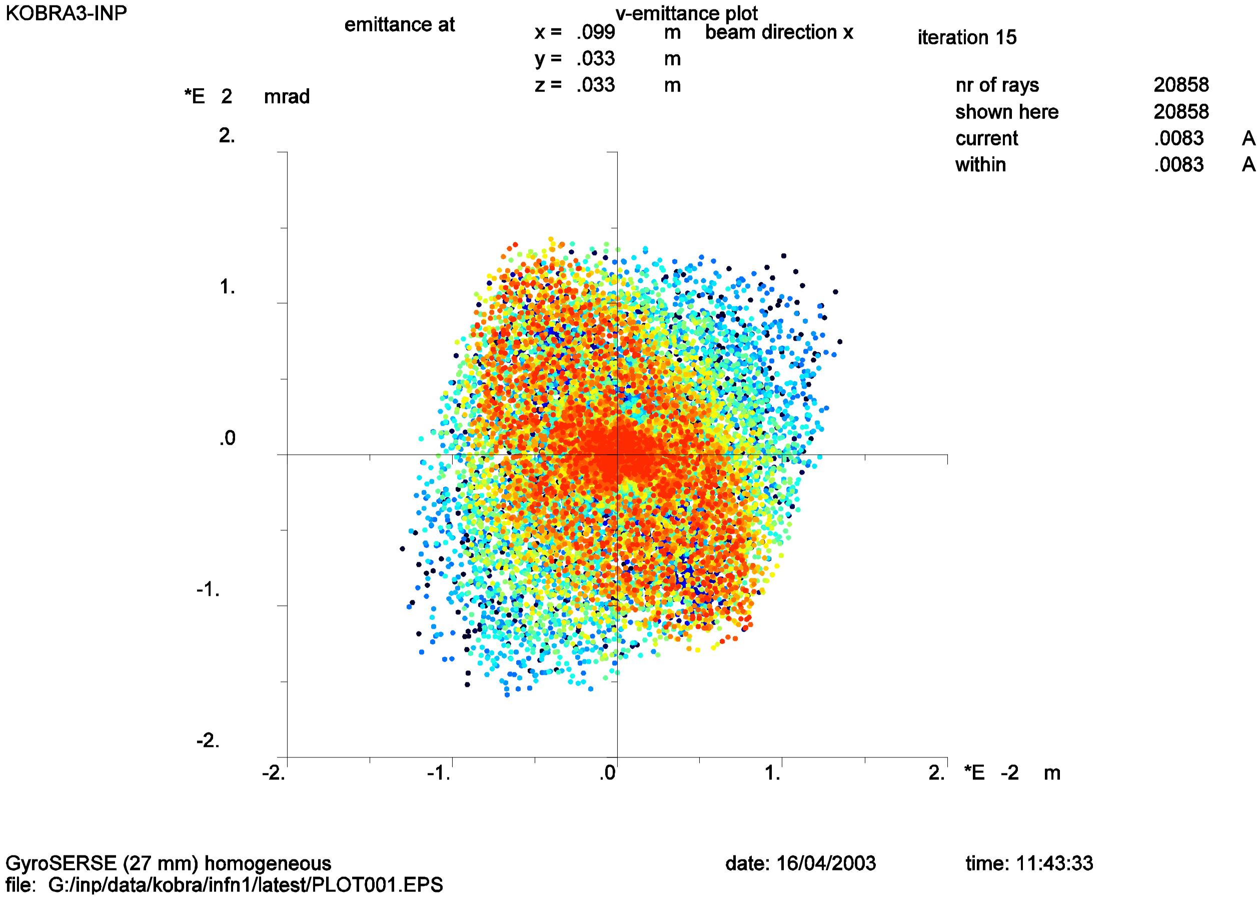
Überschreitet der gesamte extrahierte Strom diese Grenze, sollte ein Dreielektrodensystem (im accel-decel mode) verwendet werden:

ECR Quelle

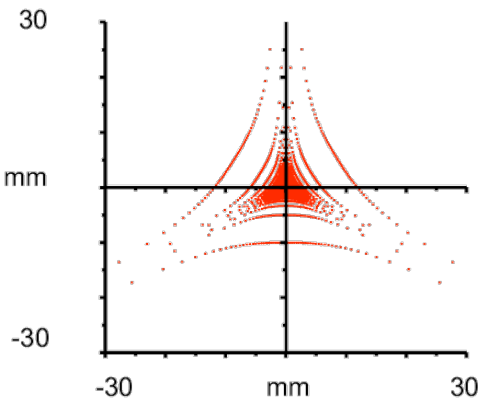


KOBRA3-INP
magnetic flux density
iteration 2
*E -2 y [m]
x comp. in xy plane at z= .033 meter
color table [T]
3.3332
3.2928
3.2524
3.212
3.1717
3.1313
3.0909
3.0506
6.
5.
4.
3.
2.
1.
.0
.0
2.
4.
6.
8.
10.
*E -2 x [m]
GyroSERSE (27 mm) homogeneous
file: F:/catania/1/PLOT009.EPS
date: 11/03/2003
time: 15:43:01

ECR Quelle


KOBRA3-INP
emittance at
v-emittance plot
x = .099 m beam direction x
y = .033 m
z = .033 m
iteration 15
nr of rays 20858
shown here 20858
current .0083 A
within .0083 A
*E 2 mrad
2.
1.
.0
-1.
-2.
-2.
-1.
.0
1.
2.
*E -2 m
GyroSERSE (27 mm) homogeneous
file: G:/inp/data/kobra/infn1/latest/PLOT001.EPS
date: 16/04/2003
time: 11:43:33

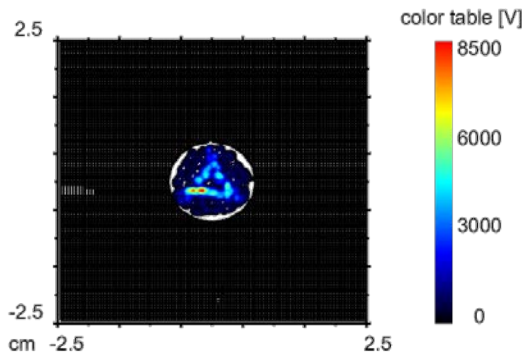
ECR Quelle

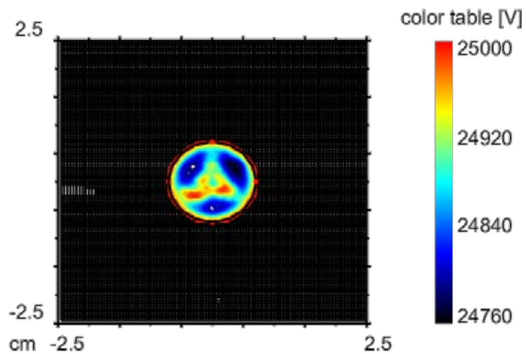


Startverteilung der Ionen

resultierende Raumladung

und Potential





Ebene Extraktionselektrode

ECR Quelle

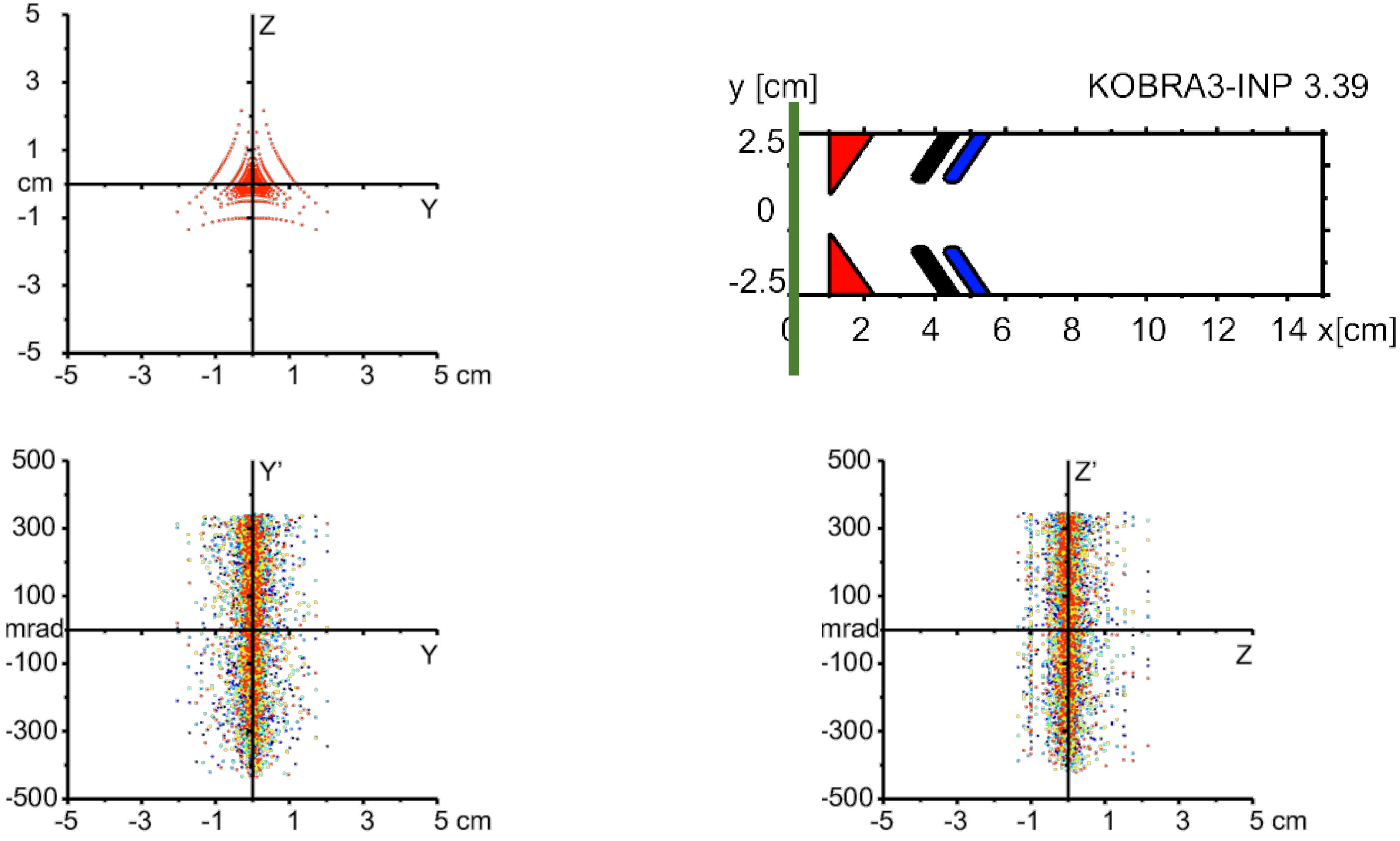
Magnetische Flußdichte B_{max} = 1.5 T

Plasmamodell: Self Ti=1 eV, Te=5 eV

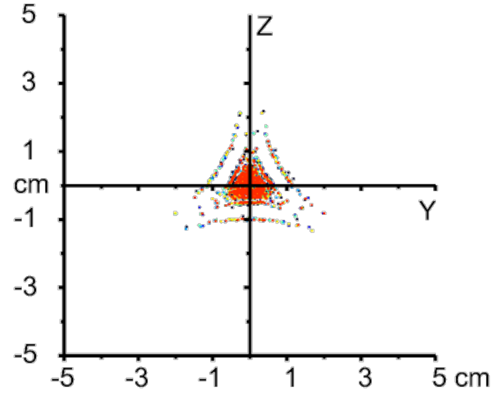
mit Hexapol

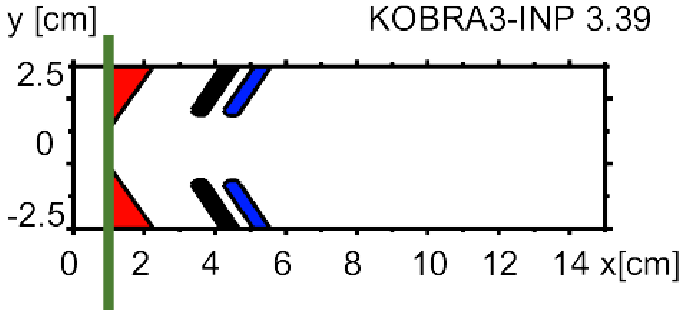
Strom 10 mA

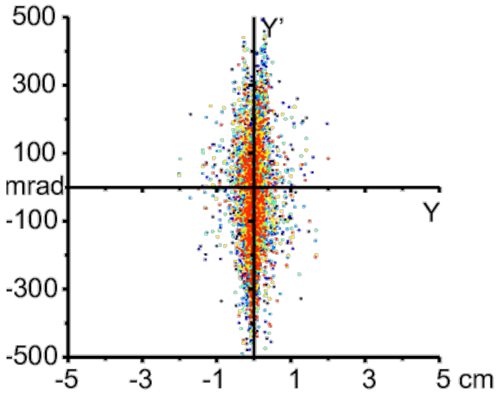
X = 0.00 m

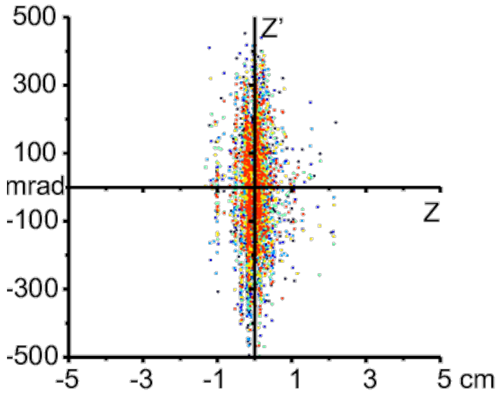


X = 0.01 m

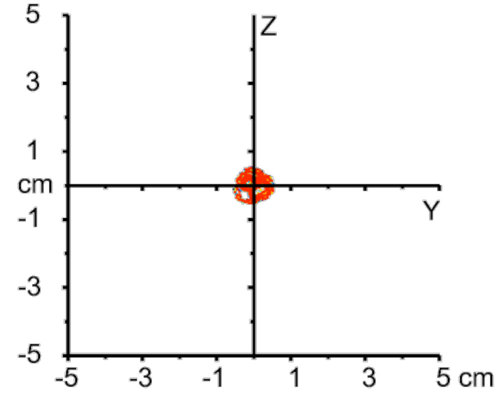

5
3
1
cm
-1
-3
-5
Z
Y
-5 -3 -1 1 3 5 cm

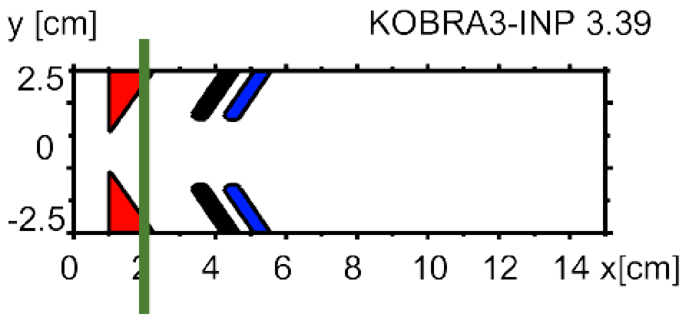

y [cm]
KOBRA3-INP 3.39
2.5
0
-2.5
0 2 4 6 8 10 12 14 x[cm]

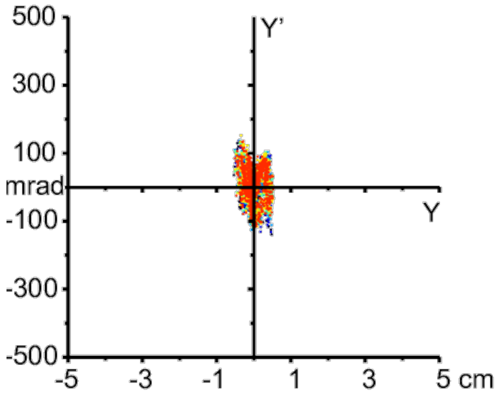

500
300
100
mrad
-100
-300
-500
Y'
Y
-5 -3 -1 1 3 5 cm

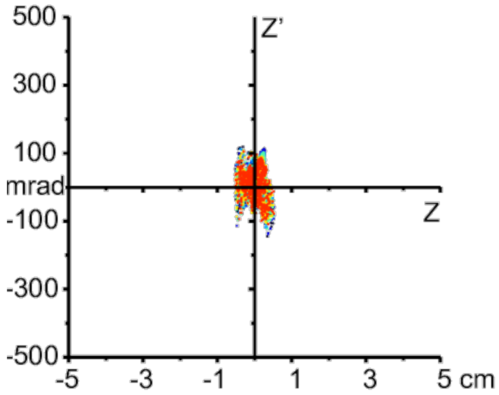

500
300
100
mrad
-100
-300
-500
Z'
Z
-5 -3 -1 1 3 5 cm

X = 0.02 m

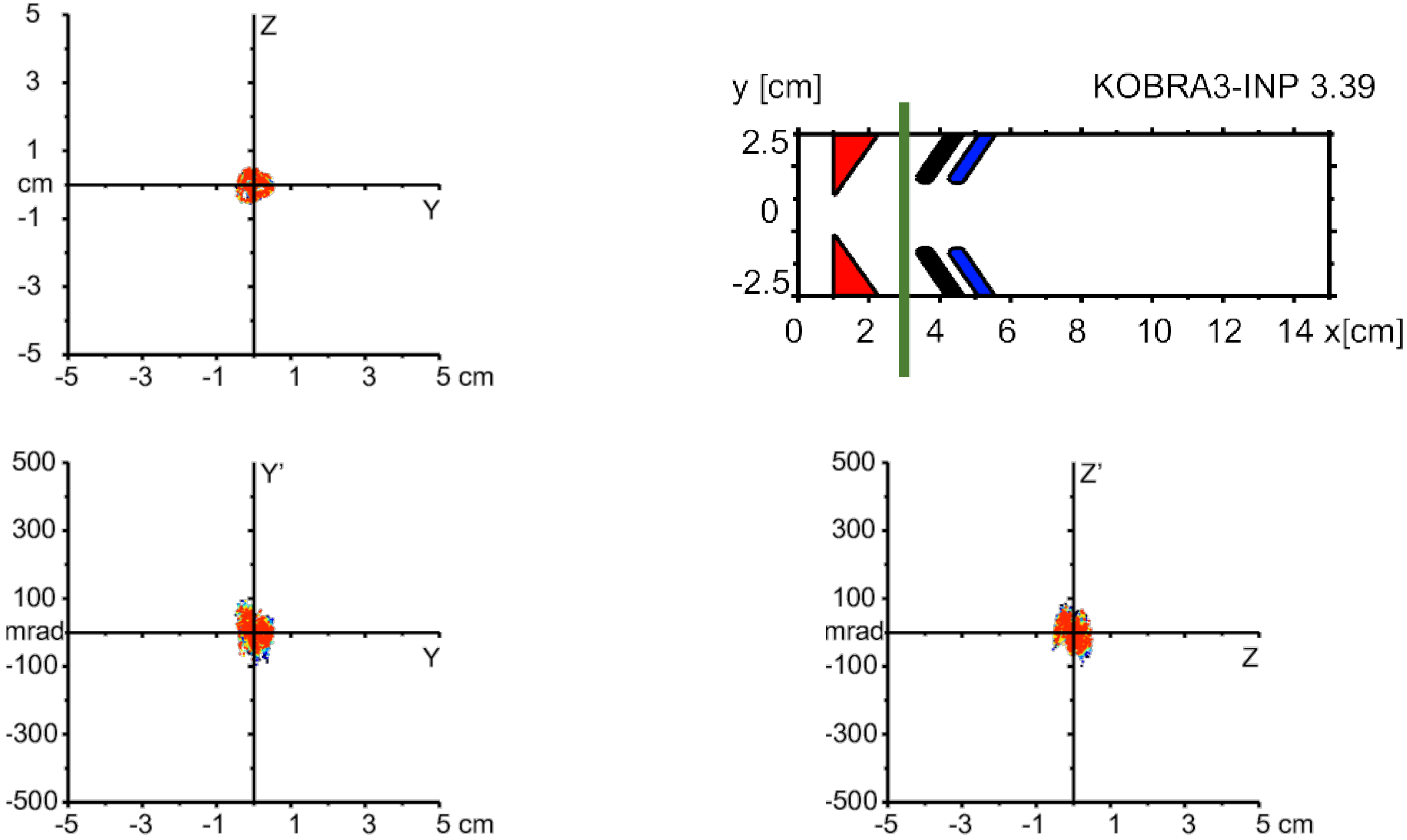

5
3
1
cm
-1
-3
-5
-5 -3 -1 1 3 5 cm
Z
Y


y [cm]
KOBRA3-INP 3.39
2.5
0
-2.5
0 2 4 6 8 10 12 14 x[cm]


500
300
100
mrad
-100
-300
-500
-5 -3 -1 1 3 5 cm
Y'
Y

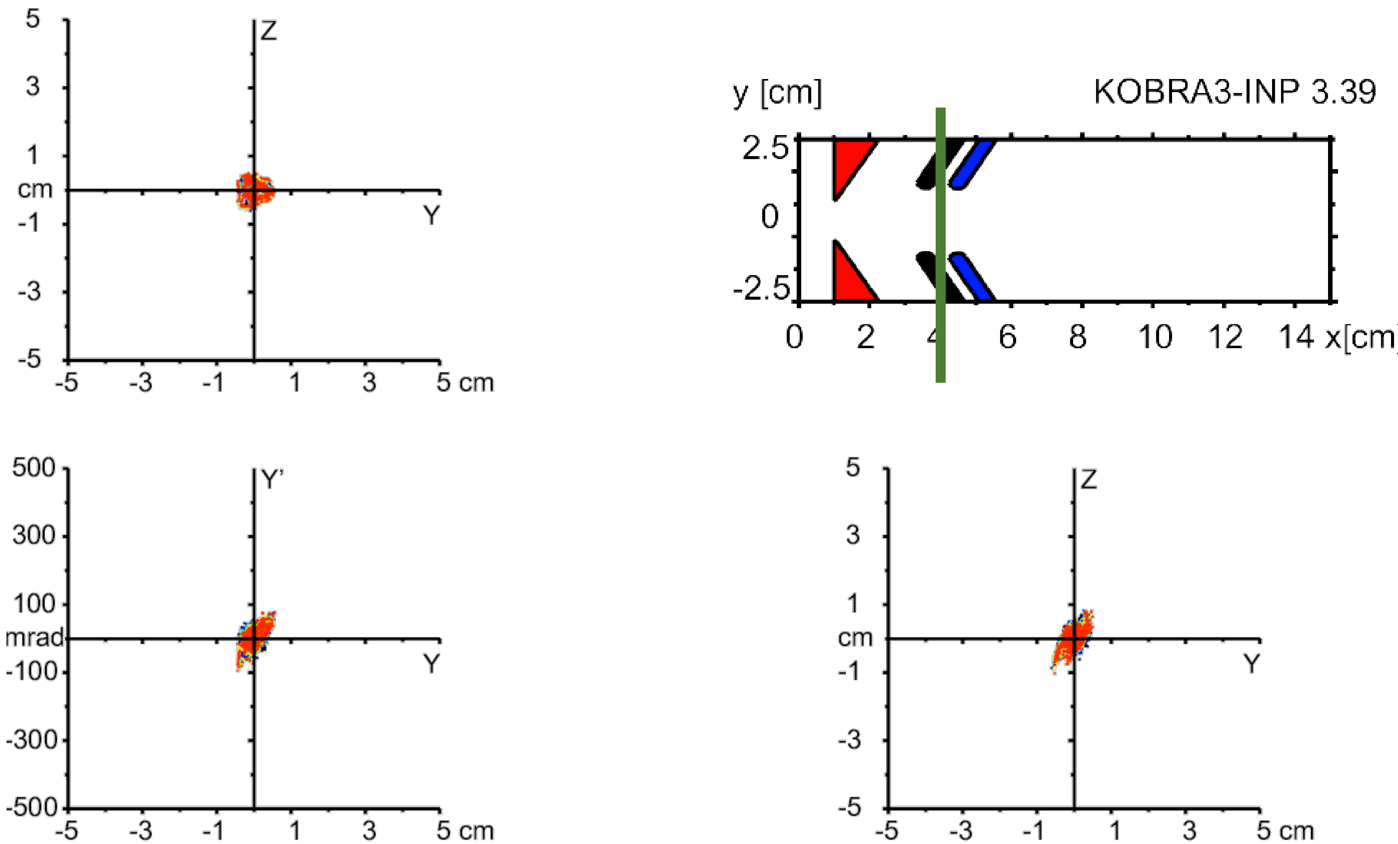

500
300
100
mrad
-100
-300
-500
-5 -3 -1 1 3 5 cm
Z'
Z

X = 0.03 m

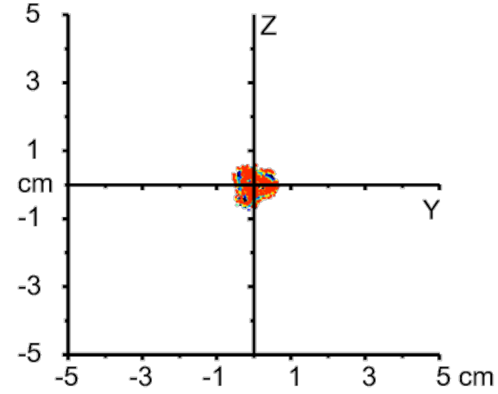


5
3
1
cm
-1
-3
-5
Z
Y
-5 -3 -1 1 3 5 cm
y [cm]
KOBRA3-INP 3.39
2.5
0
-2.5
0 2 4 6 8 10 12 14 x[cm]
500
300
100
mrad
-100
-300
-500
Y'
Y
-5 -3 -1 1 3 5 cm
500
300
100
mrad
-100
-300
-500
Z'
Z
-5 -3 -1 1 3 5 cm

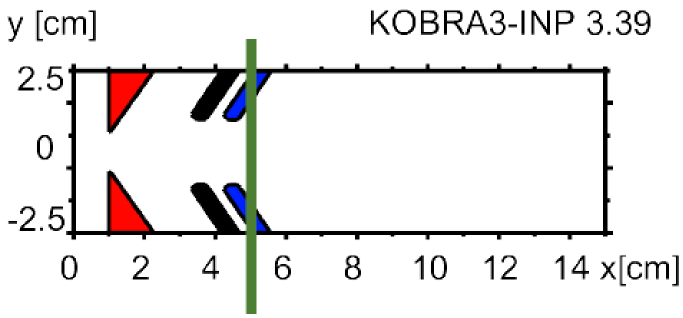
X = 0.04 m


Z
Y
cm
5 cm
y [cm]
KOBRA3-INP 3.39
2.5
0
-2.5
x[cm]
Y'
mrad
500
300
100
-100
-300
-500

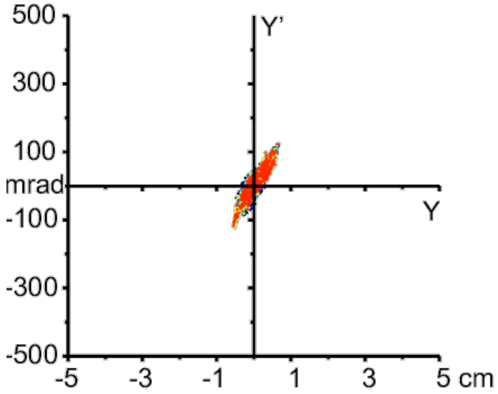
X = 0.05 m



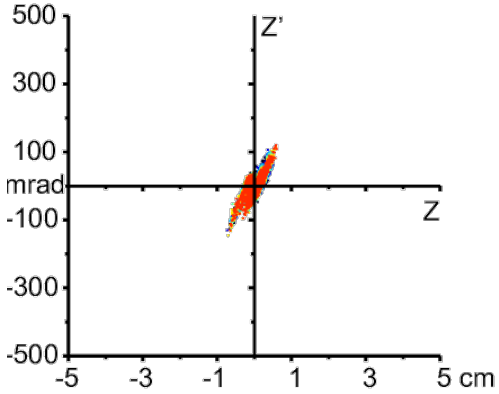
Z
Y
cm
5
3
1
-1
-3
-5
-5
-3
-1
1
3
5 cm



y [cm]
KOBRA3-INP 3.39
2.5
0
-2.5
0
2
4
6
8
10
12
14 x[cm]

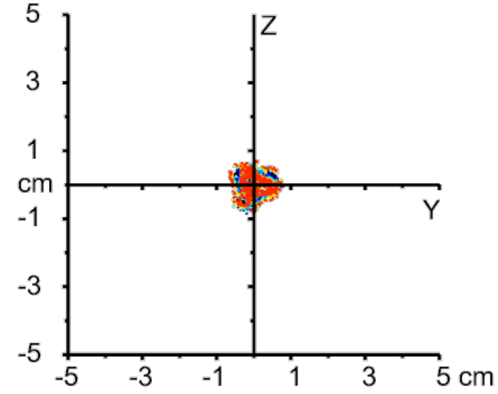


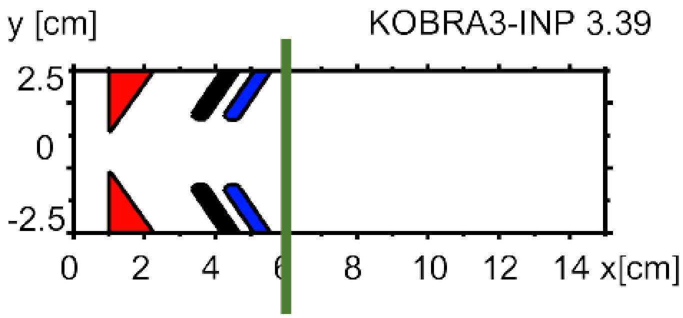
Y'
Y
mrad
500
300
100
-100
-300
-500
-5
-3
-1
1
3
5 cm

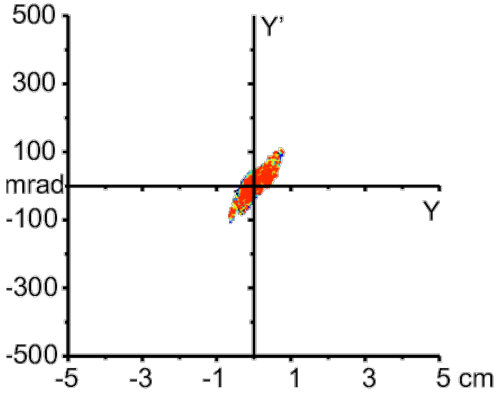


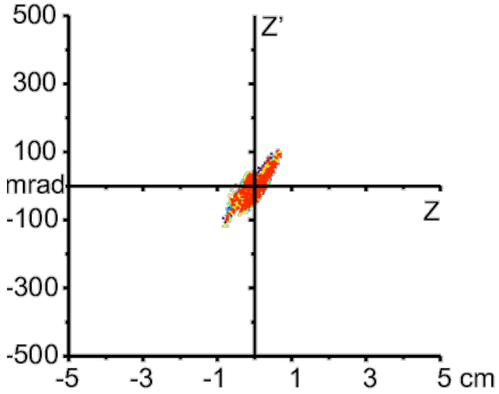
Z'
Z
mrad
500
300
100
-100
-300
-500
-5
-3
-1
1
3
5 cm

X = 0.06 m

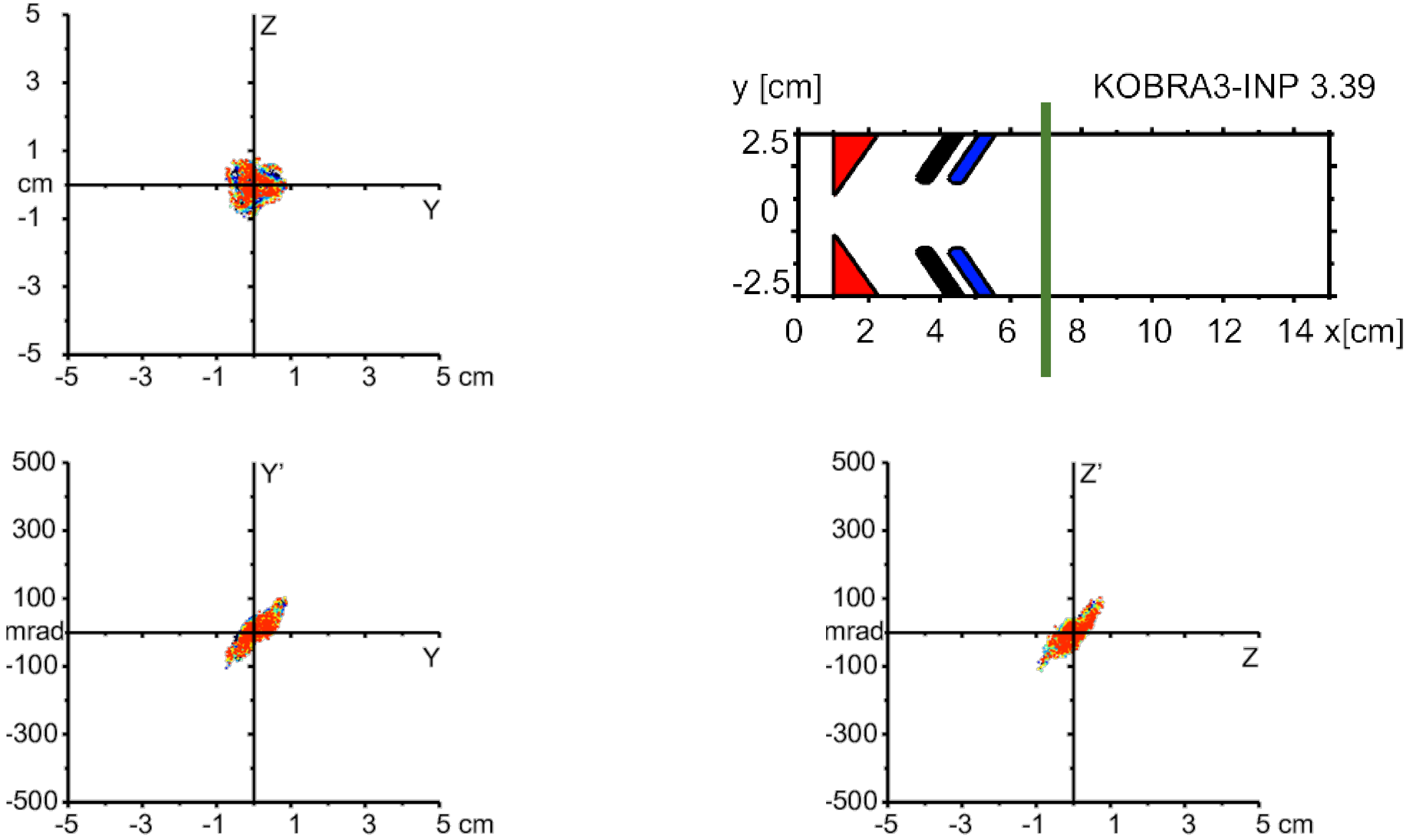






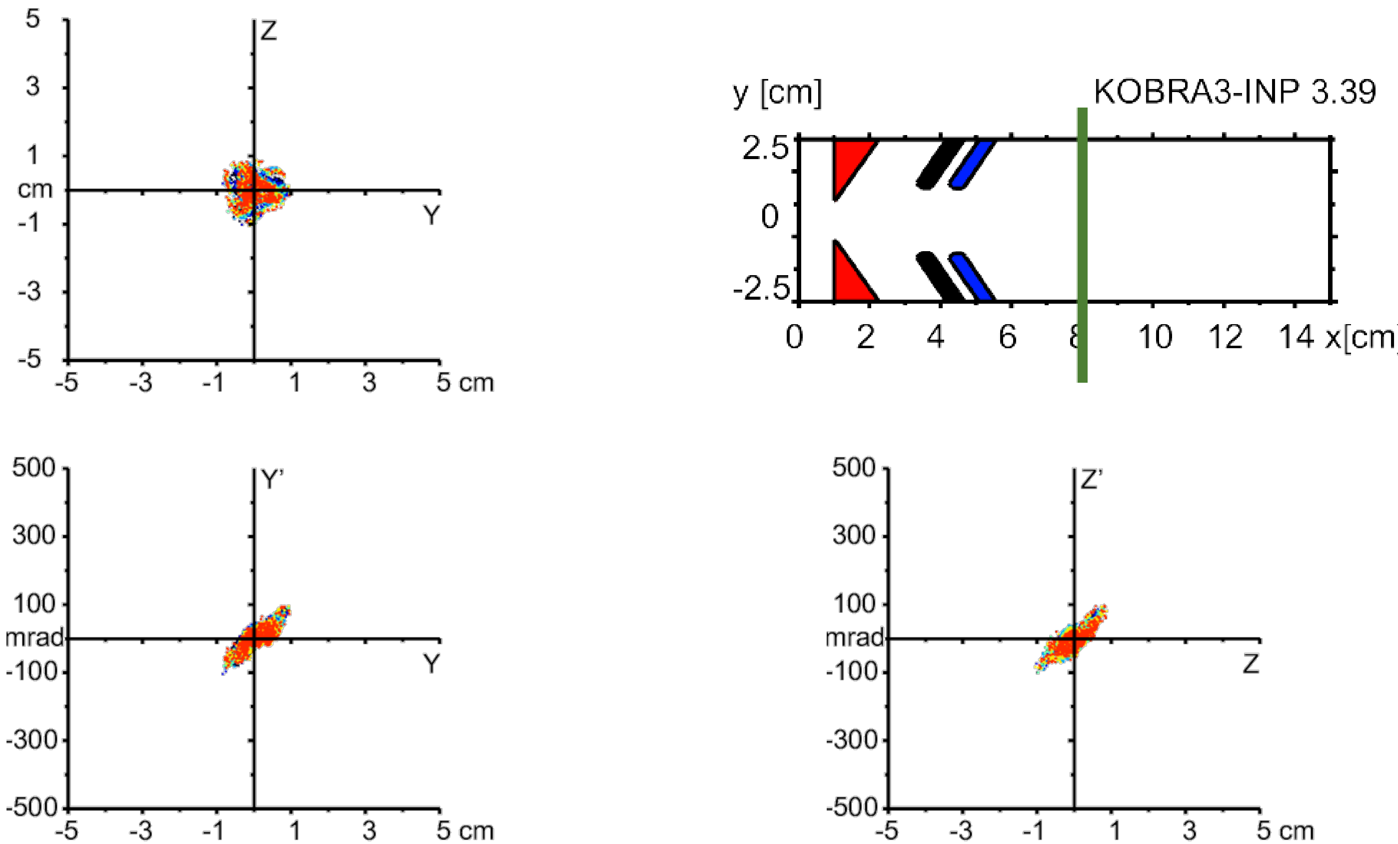


X = 0.07 m



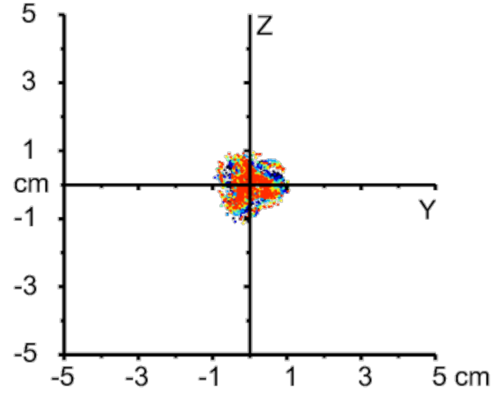
5
3
1
cm
-1
-3
-5
Z
Y
-5
-3
-1
1
3
5 cm
y [cm]
KOBRA3-INP 3.39
2.5
0
-2.5
0
2
4
6
8
10
12
14 x[cm]
500
300
100
mrad
-100
-300
-500
Y'
Y
-5
-3
-1
1
3
5 cm
500
300
100
mrad
-100
-300
-500
Z'
Z
-5
-3
-1
1
3
5 cm

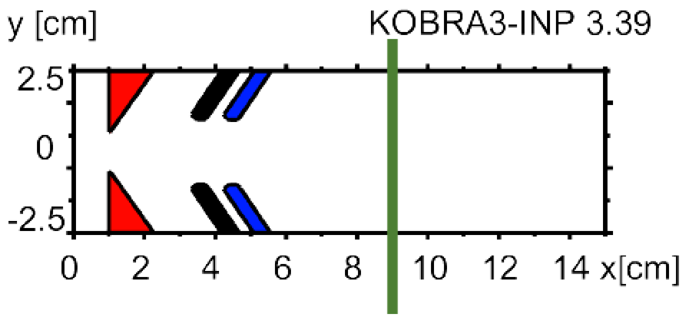
X = 0.08 m

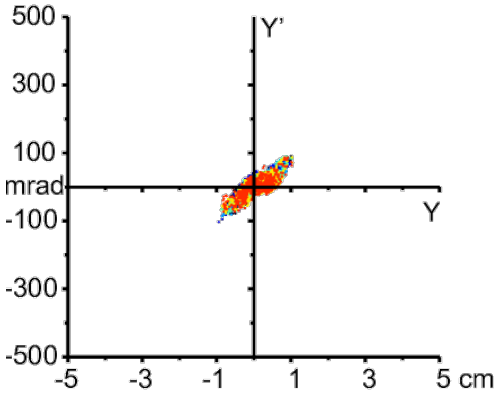


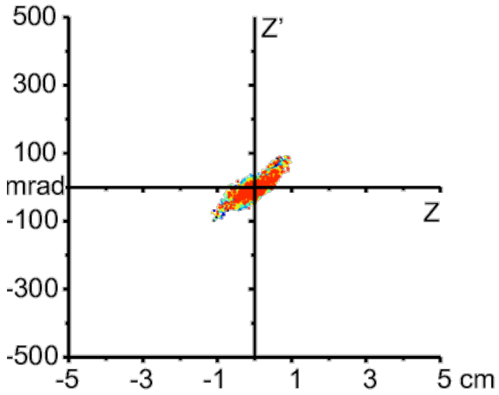
Z
Y
cm
5 cm
y [cm]
KOBRA3-INP 3.39
2.5
0
-2.5
0 2 4 6 8 10 12 14 x[cm]
Y'
Z'
mrad
500
300
100
-100
-300
-500

X = 0.09 m

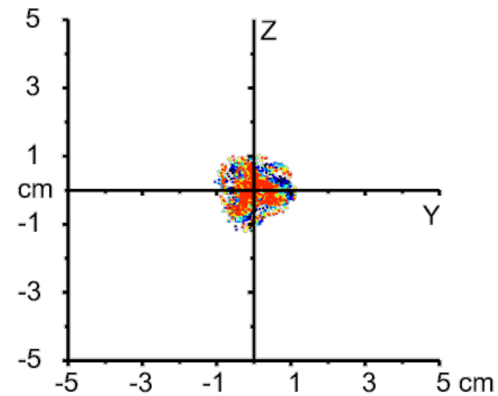

5
3
1
cm
-1
-3
-5
Z
Y
-5 -3 -1 1 3 5 cm


y [cm]
KOBRA3-INP 3.39
2.5
0
-2.5
0 2 4 6 8 10 12 14 x[cm]

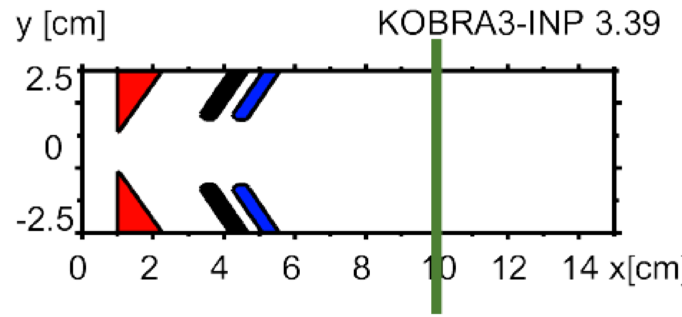

500
300
100
mrad
-100
-300
-500
Y'
Y
-5 -3 -1 1 3 5 cm


500
300
100
mrad
-100
-300
-500
Z'
Z
-5 -3 -1 1 3 5 cm

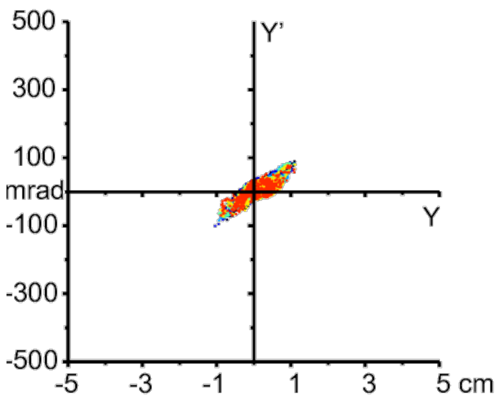
X = 0.10 m



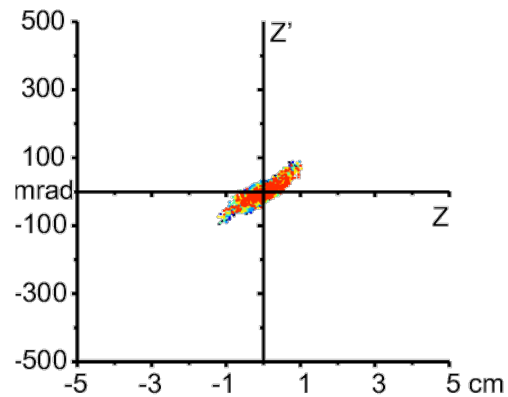
Z
Y
cm
5
3
1
-1
-3
-5
-5
-3
-1
1
3
5 cm



y [cm]
KOBRA3-INP 3.39
2.5
0
-2.5
0
2
4
6
8
10
12
14 x[cm]



Y'
Y
mrad
500
300
100
-100
-300
-500
-5
-3
-1
1
3
5 cm



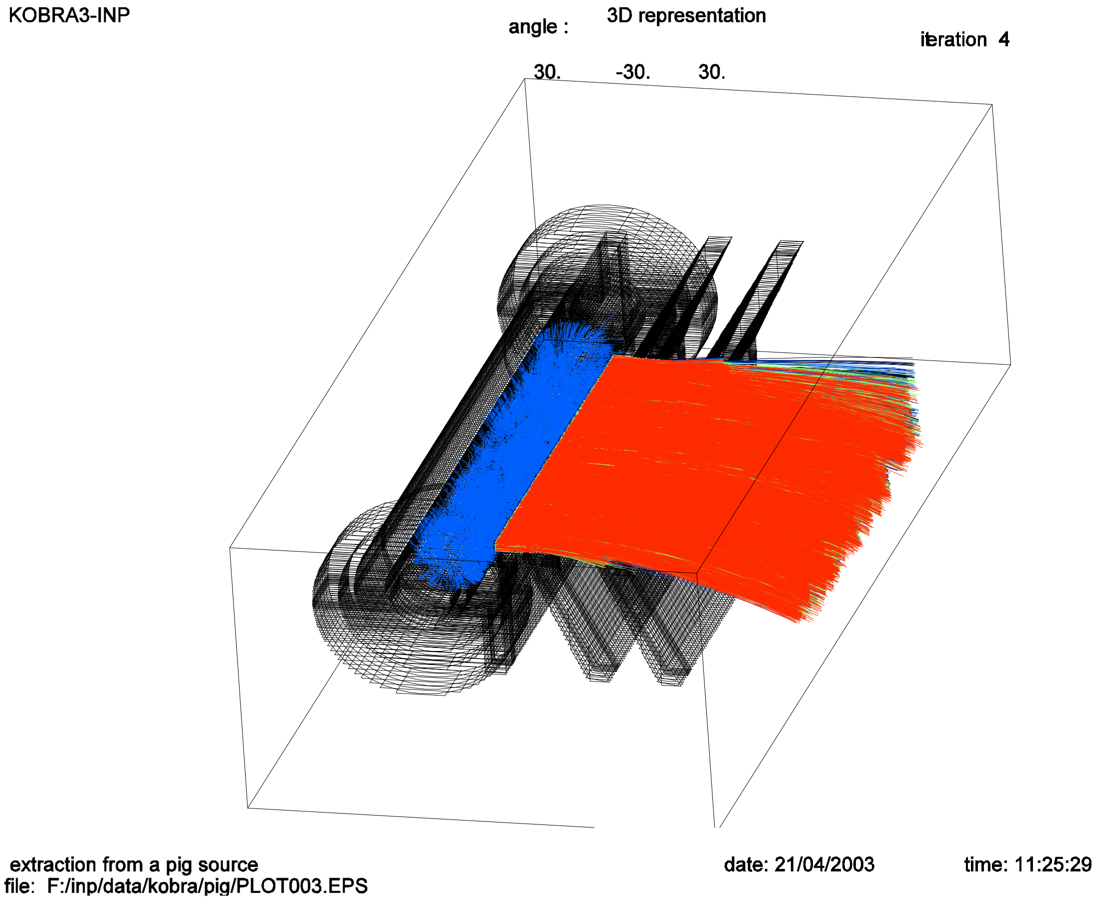
Z'
Z
mrad
500
300
100
-100
-300
-500
-5
-3
-1
1
3
5 cm

PIG Quelle

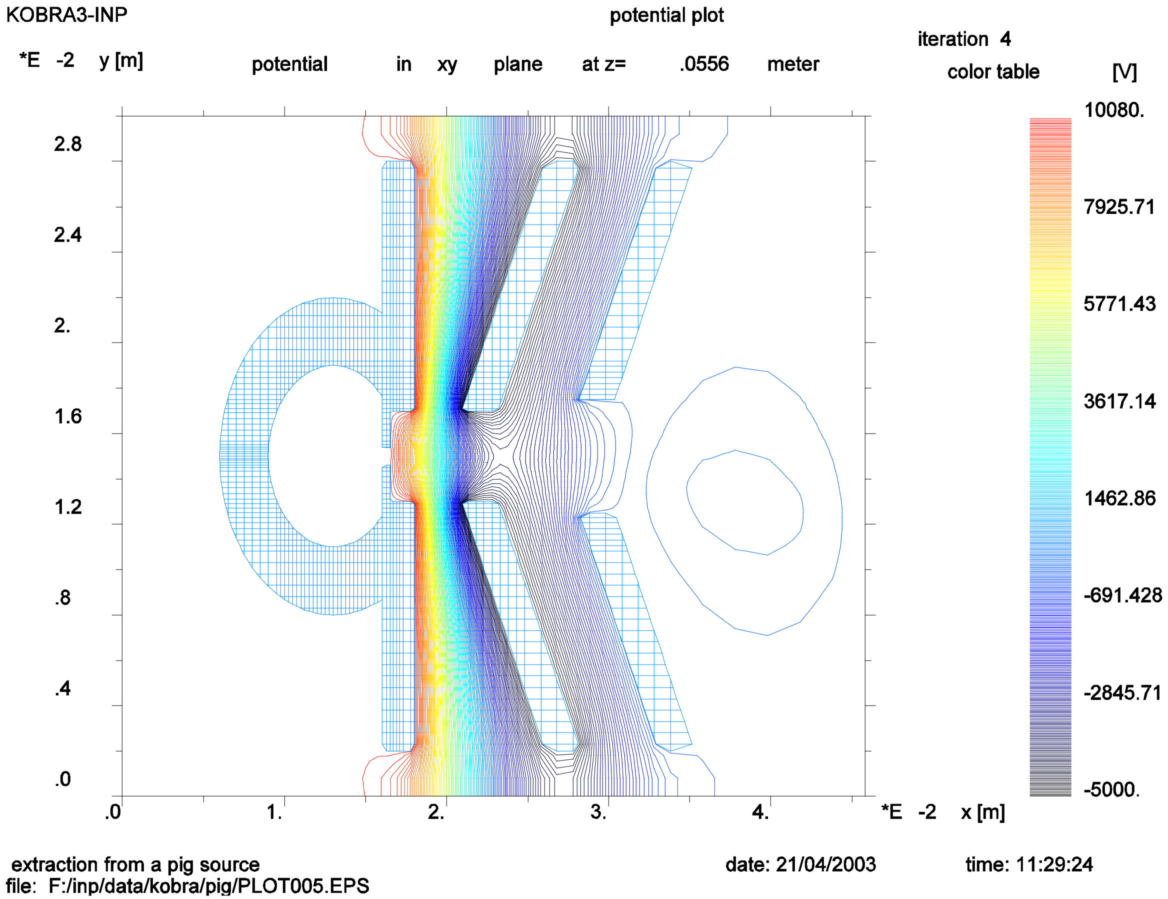
Entladung im homogenen Magnetfeld

Extraktion senkrecht zum Magnetfeld

PIG Quelle

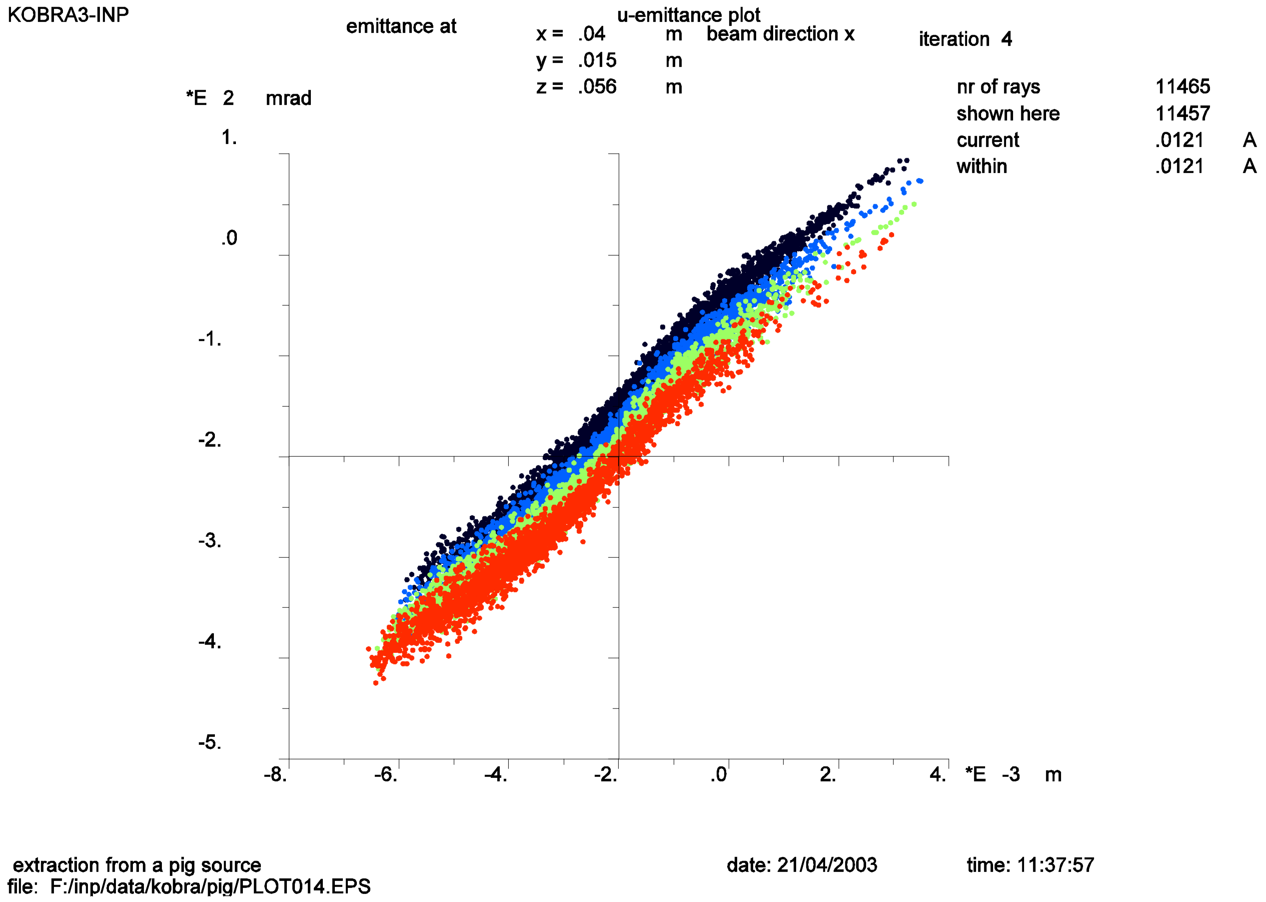

KOBRA3-INP
angle :
3D representation
iteration 4
30. -30. 30.
extraction from a pig source
file: F:/inp/data/kobra/pig/PLOT003.EPS
date: 21/04/2003
time: 11:25:29

PIG Quelle



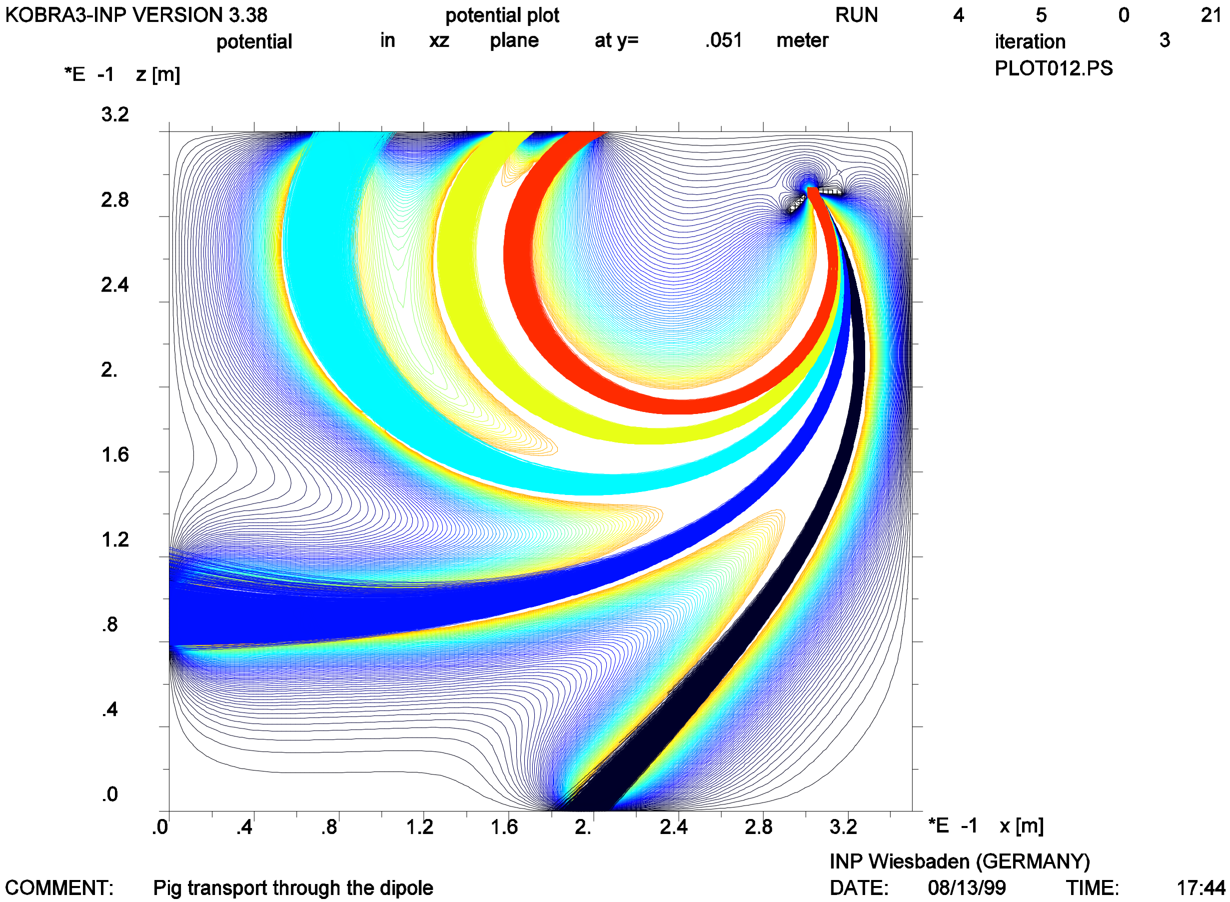
KOBRA3-INP
potential plot
iteration 4
*E -2 y [m]
potential in xy plane at z= .0556 meter
color table [V]
10080.
7925.71
5771.43
3617.14
1462.86
-691.428
-2845.71
-5000.
2.8
2.4
2.
1.6
1.2
.8
.4
.0
.0
1.
2.
3.
4.
*E -2 x [m]
extraction from a pig source
file: F:/inp/data/kobra/pig/PLOT005.EPS
date: 21/04/2003
time: 11:29:24

PIG Quelle



KOBRA3-INP
emittance at
u-emittance plot
x = .04 m beam direction x
y = .015 m
z = .056 m
iteration 4
*E 2 mrad
nr of rays 11465
shown here 11457
current .0121 A
within .0121 A
1.
.0
-1.
-2.
-3.
-4.
-5.
-8.
-6.
-4.
-2.
.0
2.
4.
*E -3 m
extraction from a pig source
date: 21/04/2003
time: 11:37:57
file: F:/inp/data/kobra/pig/PLOT014.EPS

PIG Quelle

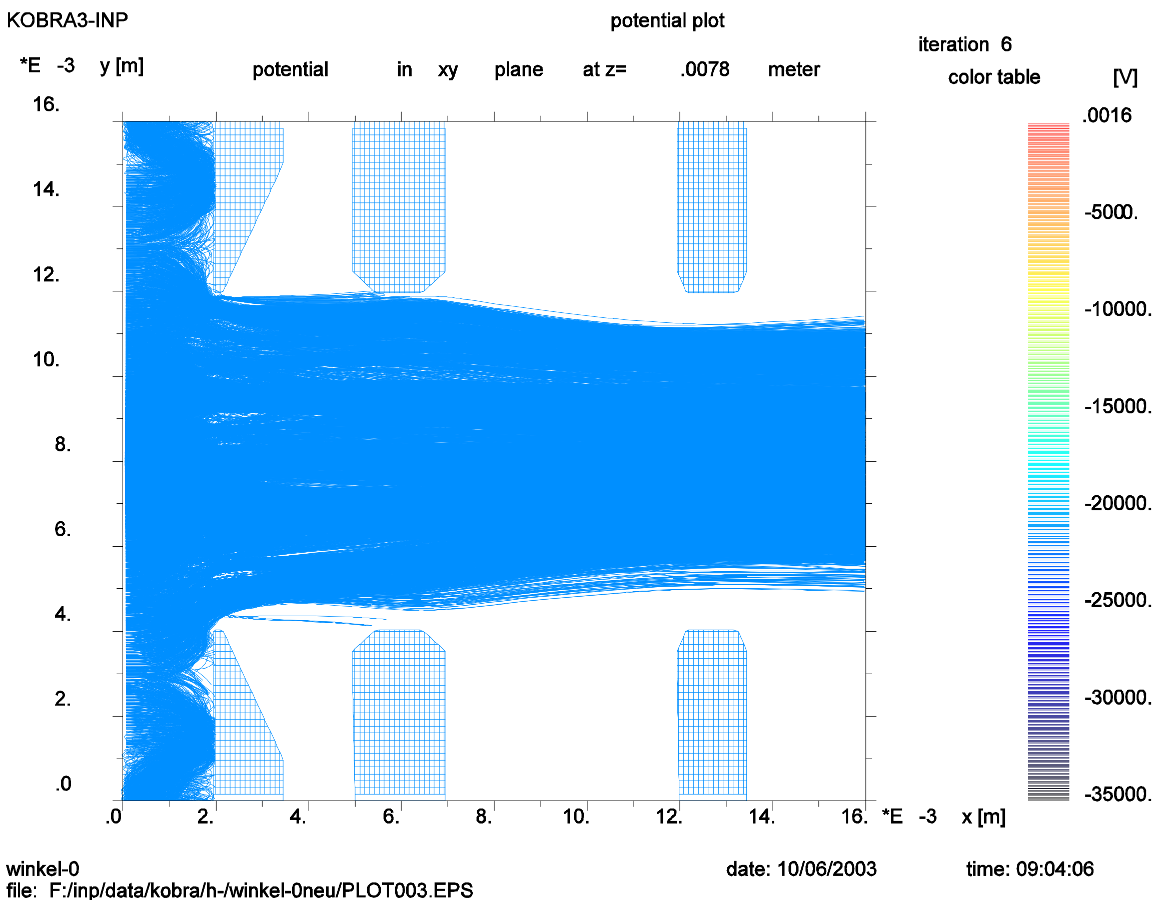

KOBRA3-INP VERSION 3.38
potential plot
RUN 4 5 0 21
potential in xz plane at y= .051 meter
iteration 3
PLOT012.PS
*E -1 z [m]
3.2
2.8
2.4
2.
1.6
1.2
.8
.4
.0
.0
.4
.8
1.2
1.6
2.
2.4
2.8
3.2
*E -1 x [m]
INP Wiesbaden (GERMANY)
COMMENT: Pig transport through the dipole
DATE: 08/13/99 TIME: 17:44

H- Quelle

Bei Quellen für negative Ionen werden Ionen und Elektronen gleichzeitig aus der Quelle extrahiert.

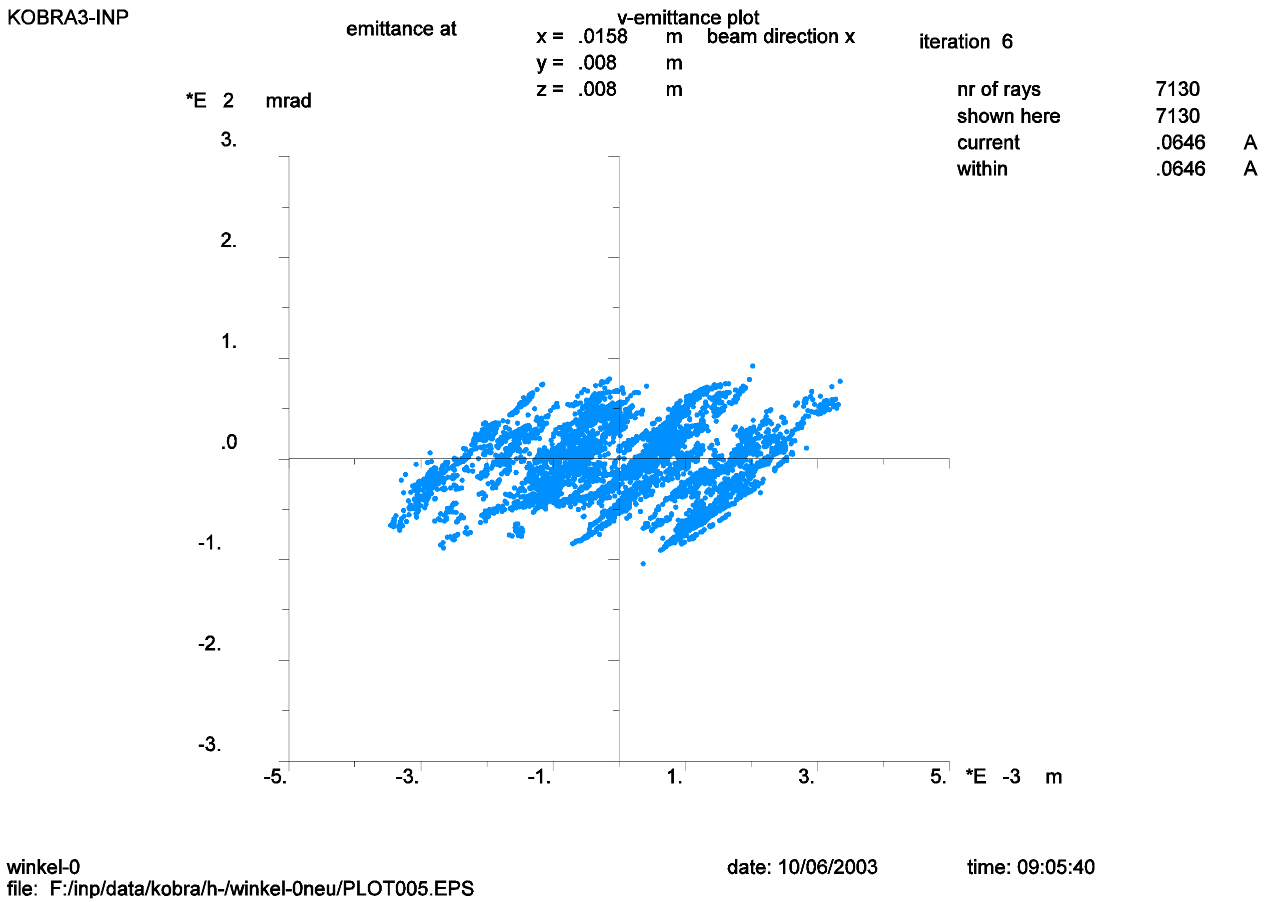
Je nach Quellentyp werden 10 bis 50 mal mehr Elektronen als Ionen extrahiert

H- Quelle



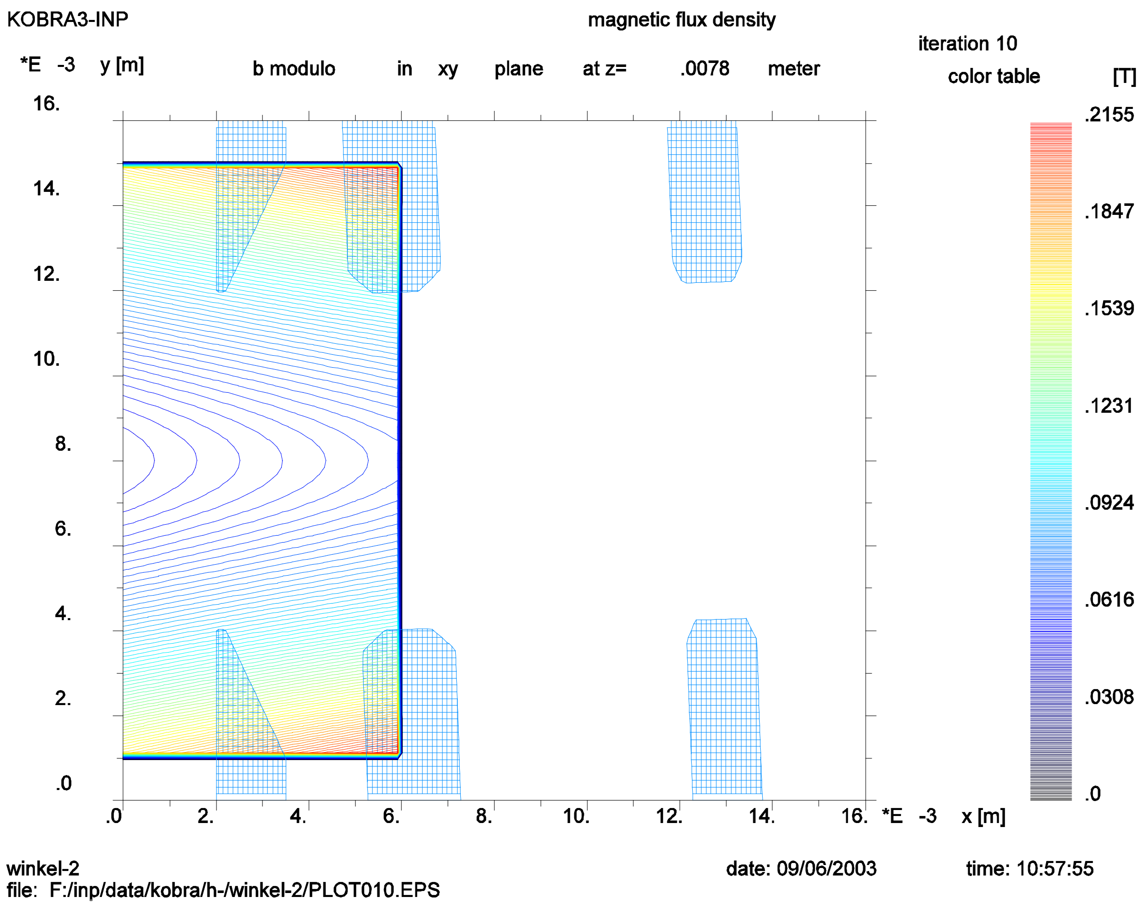
KOBRA3-INP
potential plot
iteration 6
*E -3 y [m]
potential in xy plane at z= .0078 meter
color table [V]
16.
14.
12.
10.
8.
6.
4.
2.
.0
.0 2. 4. 6. 8. 10. 12. 14. 16. *E -3 x [m]
.0016
-5000.
-10000.
-15000.
-20000.
-25000.
-30000.
-35000.
winkel-0
file: F:/inp/data/kobra/h-/winkel-0neu/PLOT003.EPS
date: 10/06/2003
time: 09:04:06

H- Quelle

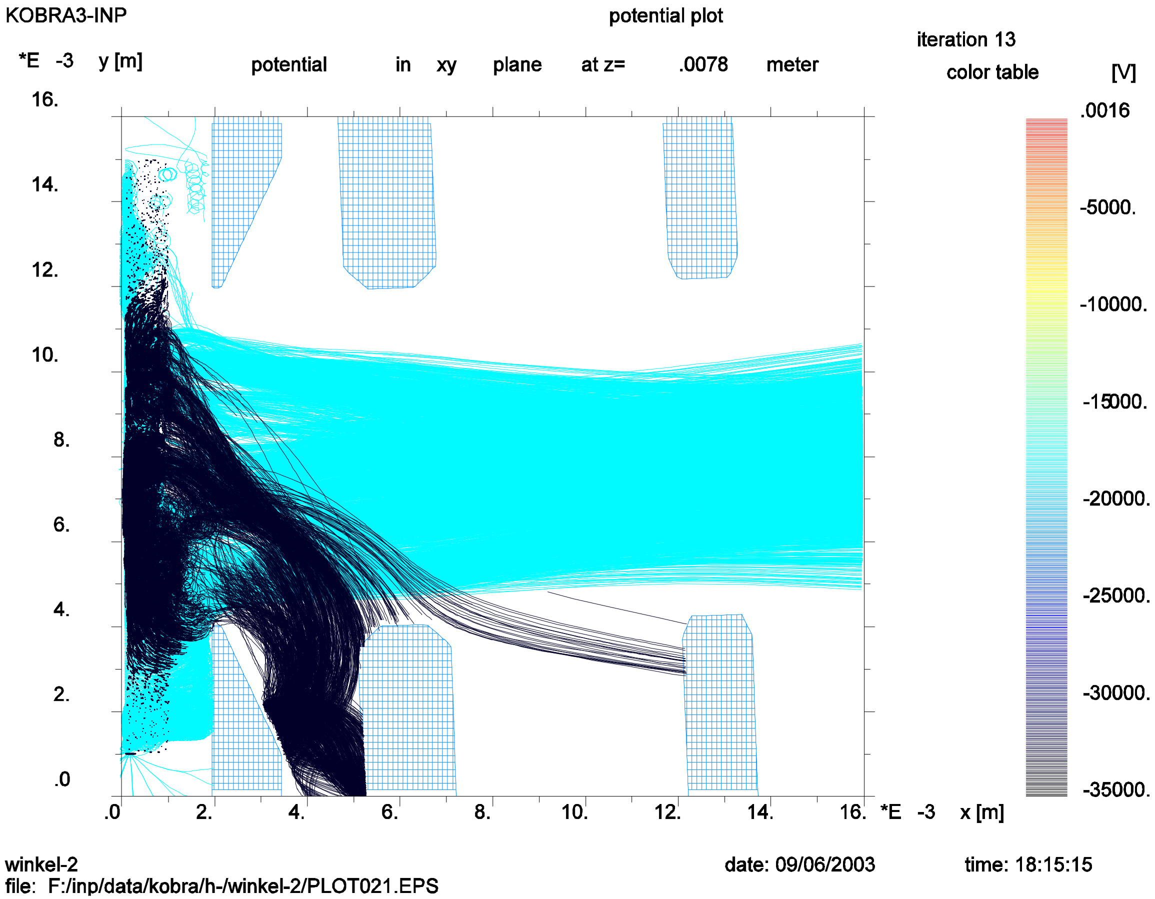


KOBRA3-INP
emittance at
v-emittance plot
x = .0158 m beam direction x
y = .008 m
z = .008 m
iteration 6
*E 2 mrad
nr of rays 7130
shown here 7130
current .0646 A
within .0646 A
3.
2.
1.
.0
-1.
-2.
-3.
-5.
-3.
-1.
1.
3.
5.
*E -3 m
winkel-0
file: F:/inp/data/kobra/h-/winkel-0neu/PLOT005.EPS
date: 10/06/2003
time: 09:05:40

H- Quelle

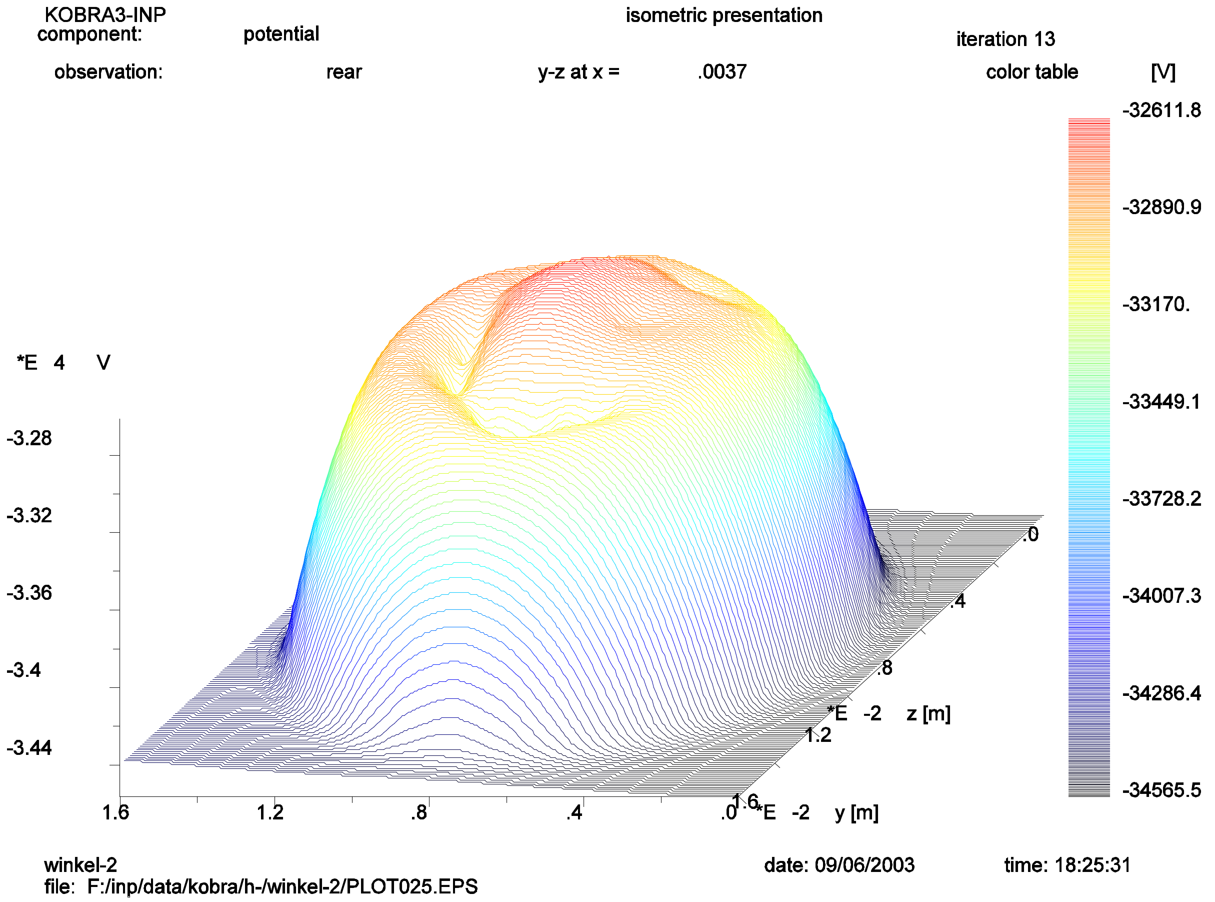

KOBRA3-INP
magnetic flux density
iteration 10
*E -3 y [m]
b modulo in xy plane at z= .0078 meter
color table [T]
16.
14.
12.
10.
8.
6.
4.
2.
.0
.0
2.
4.
6.
8.
10.
12.
14.
16. *E -3 x [m]
.2155
.1847
.1539
.1231
.0924
.0616
.0308
.0
winkel-2
file: F:/inp/data/kobra/h-/winkel-2/PLOT010.EPS
date: 09/06/2003
time: 10:57:55

H- Quelle



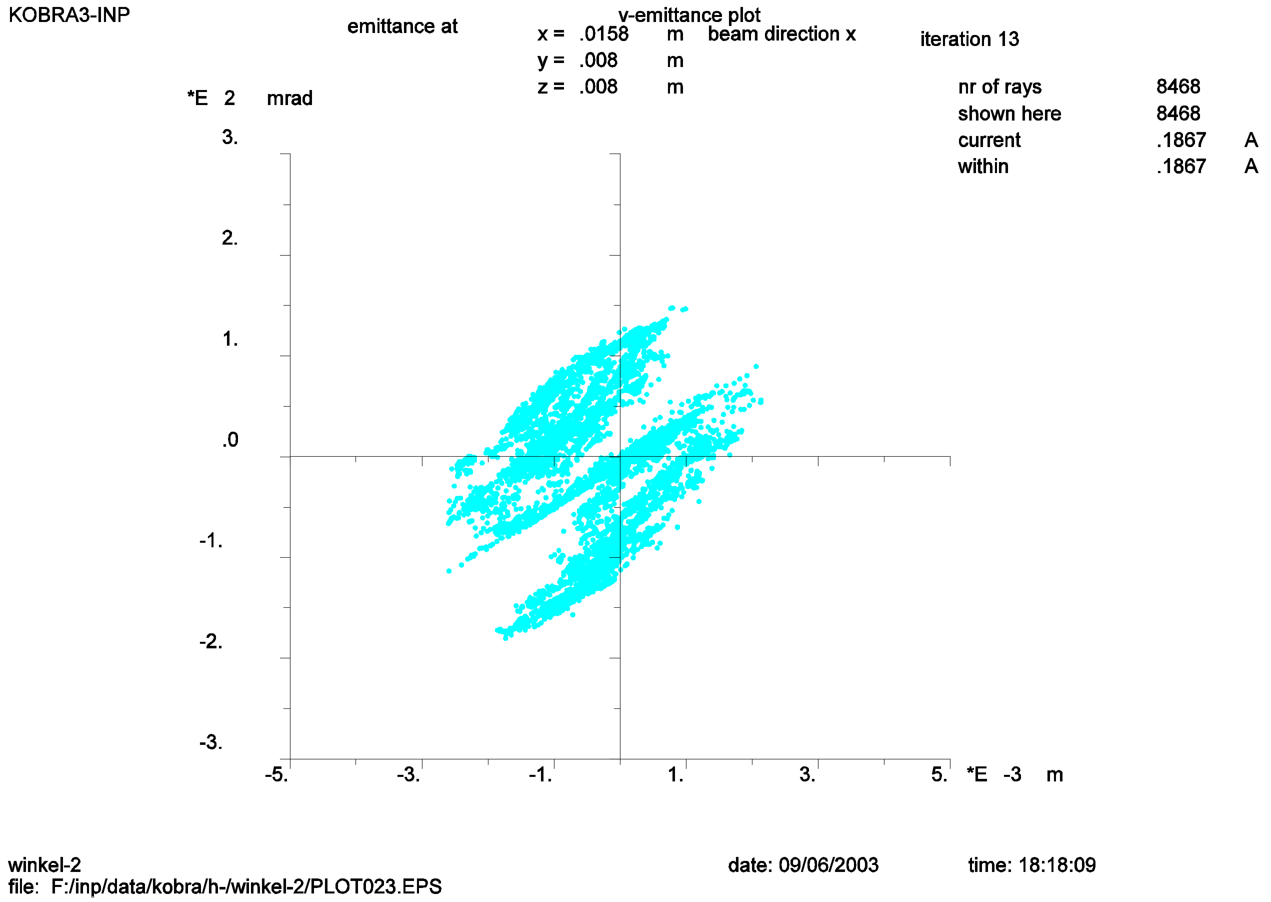
KOBRA3-INP
potential plot
iteration 13
*E -3 y [m]
potential in xy plane at z= .0078 meter
color table [V]
16.
14.
12.
10.
8.
6.
4.
2.
.0
.0 2. 4. 6. 8. 10. 12. 14. 16. *E -3 x [m]
.0016
-5000.
-10000.
-15000.
-20000.
-25000.
-30000.
-35000.
winkel-2
file: F:/inp/data/kobra/h-/winkel-2/PLOT021.EPS
date: 09/06/2003
time: 18:15:15

H- Quelle



KOBRA3-INP
component:
potential
isometric presentation
iteration 13
observation:
rear
y-z at x =
.0037
color table
[V]
-32611.8
-32890.9
-33170.
-33449.1
-33728.2
-34007.3
-34286.4
-34565.5
*E 4 V
-3.28
-3.32
-3.36
-3.4
-3.44
1.6
1.2
.8
.4
.0
*E -2 y [m]
.0
.4
.8
1.2
1.6
*E -2 z [m]
winkel-2
file: F:/inp/data/kobra/h-/winkel-2/PLOT025.EPS
date: 09/06/2003
time: 18:25:31

H- Quelle


KOBRA3-INP
emittance at
v-emittance plot
x = .0158 m beam direction x
y = .008 m
z = .008 m
iteration 13
nr of rays 8468
shown here 8468
current .1867 A
within .1867 A
*E 2 mrad
3.
2.
1.
.0
-1.
-2.
-3.
-5.
-3.
-1.
1.
3.
5.
*E -3 m
winkel-2
file: F:/inp/data/kobra/h-/winkel-2/PLOT023.EPS
date: 09/06/2003
time: 18:18:09

Simulation der Extraktion von Ionenstrahlen aus der Quelle

Es sollte klar geworden sein, daß das jeweilig gültige Modell des Plasma-generators bekannt sein muß, um Simulationen durchführen zu können.

Die Startverteilung der Ionen und Elektronen müssen ebenso bekannt sein.

?