

version 8.3.45

See "Twinsol (solenoid) utility" [version 7.9] at http://groups.nslc.msu.edu/lise/paper/2006_june_utilities.pdf

Utilities 1D-Plot 2D-Plot Databases Help

Spectrometric Calculator by J.Kantele
The code "CHARGE"
The code "GLOBAL"
Units Converter
BI (search of 2-dimensional peaks)
Converter of FORTRAN-files to C-files

PACE4 (fusion-evaporation code)
PACE4's calculations plot
MOTER (ray tracing code)
MOTER's calculations plot

Reaction's Characteristics
Radiation length
Electromagnetic excitation plots
Create an initial file for nucleon pick-up (beta)

Plot of Fragment Range in material versus Energy
Plot of Fragment Stopping Power (dE/dx) in material versus Energy
Plot of Angular Straggling in material versus Energy
Plot of Equilibrium Thickness versus Energy

Range optimizer
Gas pressure optimization for gas-filled dipole
Brho Analyzer
Calculation of Angle on the LISE3 target
MSP-144 utility
Twinsol (solenoid) utility
ISOL catcher utility
User cross-sections analysis using Abrasion-Ablation model
Rate & transmission calculation: batch mode
Stripper foil lifetime

Twinsol settings

Use the second solenoid
Twinsol operation mode: Antiparallel Parallel
 Use the defocusing solenoid
 Use the absorber
 Use the "soft-edge" corrections for solenoid matrix calculations

Twinsol optical matrix
Twinsol scheme

Twinsol Length = 5.862 m
Distance to plot rays = 7.4 m
Integration Step = 0.002 m

1-st solenoid block

1-st solenoid block settings
Optical Matrix for setting fragment
Block Length = 1.954 m
B = 3.5399 T

2-nd solenoid block

2-nd solenoid block settings
Optical Matrix for setting fragment
Block Length = 1.954 m
B = 2.4599 T

Initial Beam

Projectile

	Beam emittance	Initial ray values	
1. X	1	5	mm
2. T	20	20	mrad
3. Y	1	-5	mm
4. F	20	25	mrad
1&3. R	1.41	7.07	mm
2&4. A	28.28	32.02	mrad

40Ar18+ (10.00 MeV/u)
P trnsprt 0.3038 GeV/c

Beam tracking

2-nd solenoid: x0 1.954 m
"Transport" (matrix solution)

	Beam sigmas	Ray Values	Ray TRACE
1. X	10.71	17.79	19.37
2. T	9.44	-11.63	-7.32
3. Y	10.71	-0.03	-5.27
4. F	9.44	12.66	12.42
1&3. R	15.14	17.79	20.08
2&4. A	13.35	17.2	14.41

Energy (MeV/u) = 10
Time of flight (ns) = 45.13

Absorber

Absorber settings
Distance from target to absorber 1.954 m
Charge state after absorber (Z-D) 0

defocusing solenoid

Settings
Optical Matrix
Length = 1.954 m
B = 1.8 T

Files

current file
twinsol_origin
Save file as
Load file
Save for multidisplay

Plot options. Show:

Transport: Beam Sigmas
 Transport: Ray Values
 Ray Trace
 Scratch file data
Selected plot 1. X

Utility

Function of: 19. matrix: X/X
from: Fragment energy (MeV/u)
at: 7.4 m
Distance to plot rays
Calculate

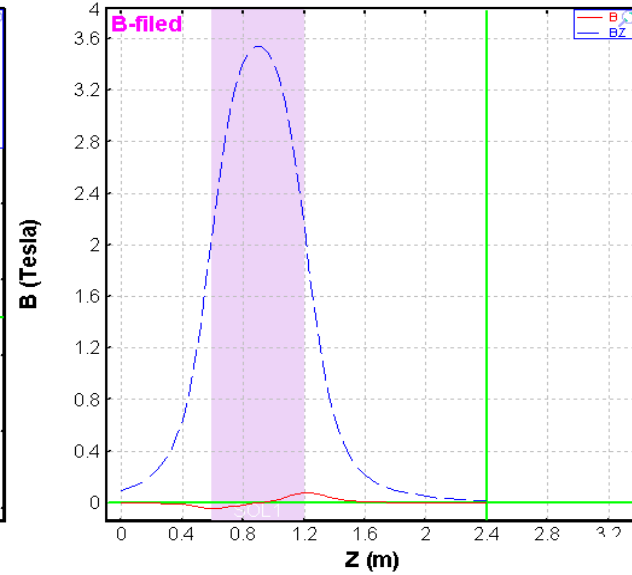
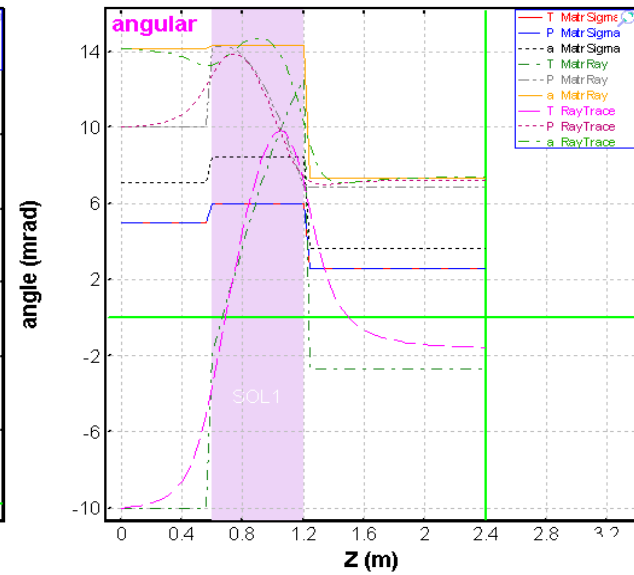
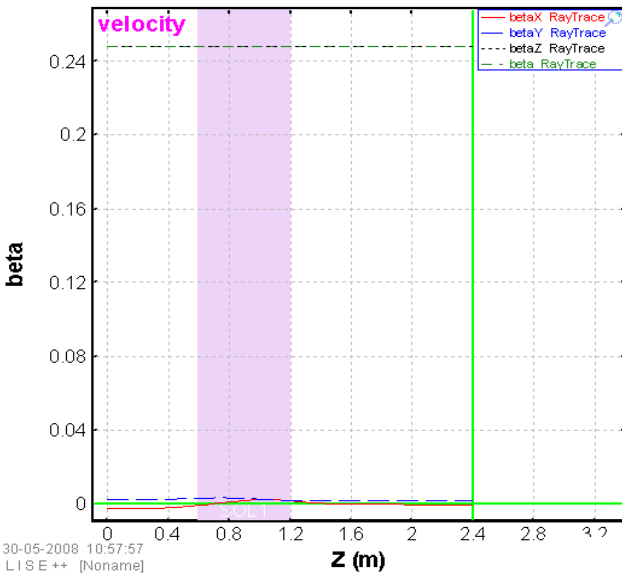
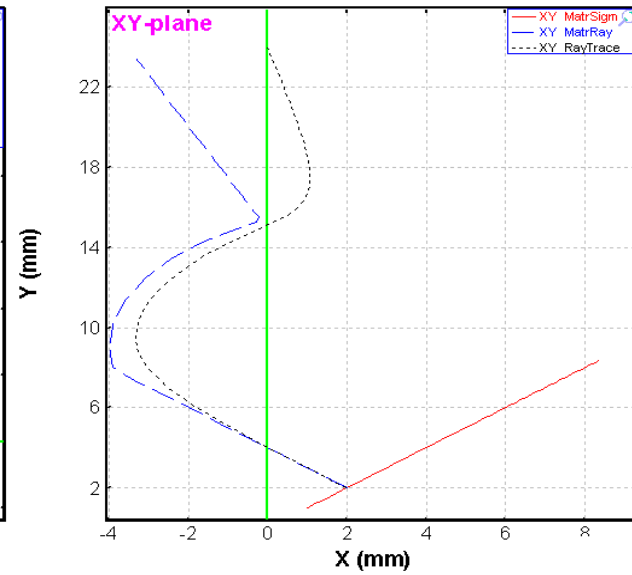
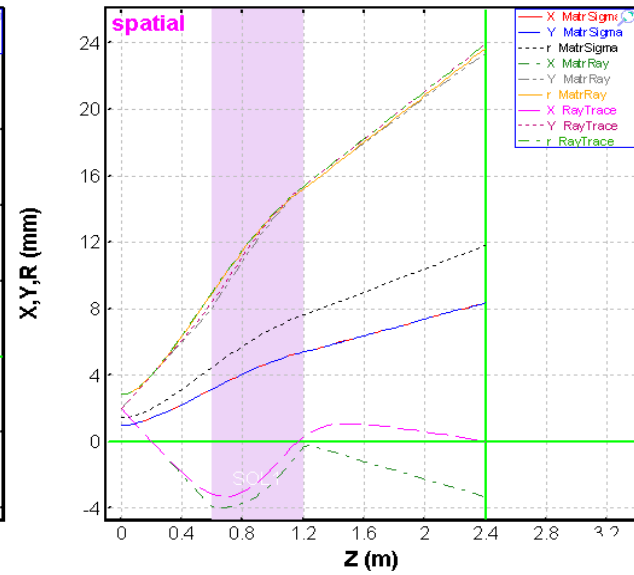
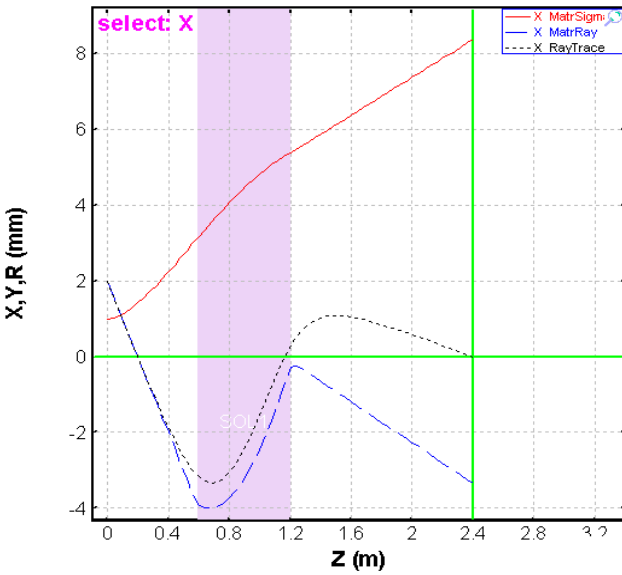
Calculate Save & Exit Plot Quit

The code operates under MS Windows environment and provides a highly user-friendly interface. It can be freely downloaded from the following internet addresses:

<http://www.nslc.msu.edu/lise>

Twin Sol

$^{40}\text{Ar}^{18+}$ (E=30.00 MeV/u or Ptrans=0.529 GeV/c) Emittance:1,5,1,5 Init.Ray:2,-10,2,10
 1st SOL: L1=0.9m L2=1.5m Coil=0.6m B0=3.540T Efield=No



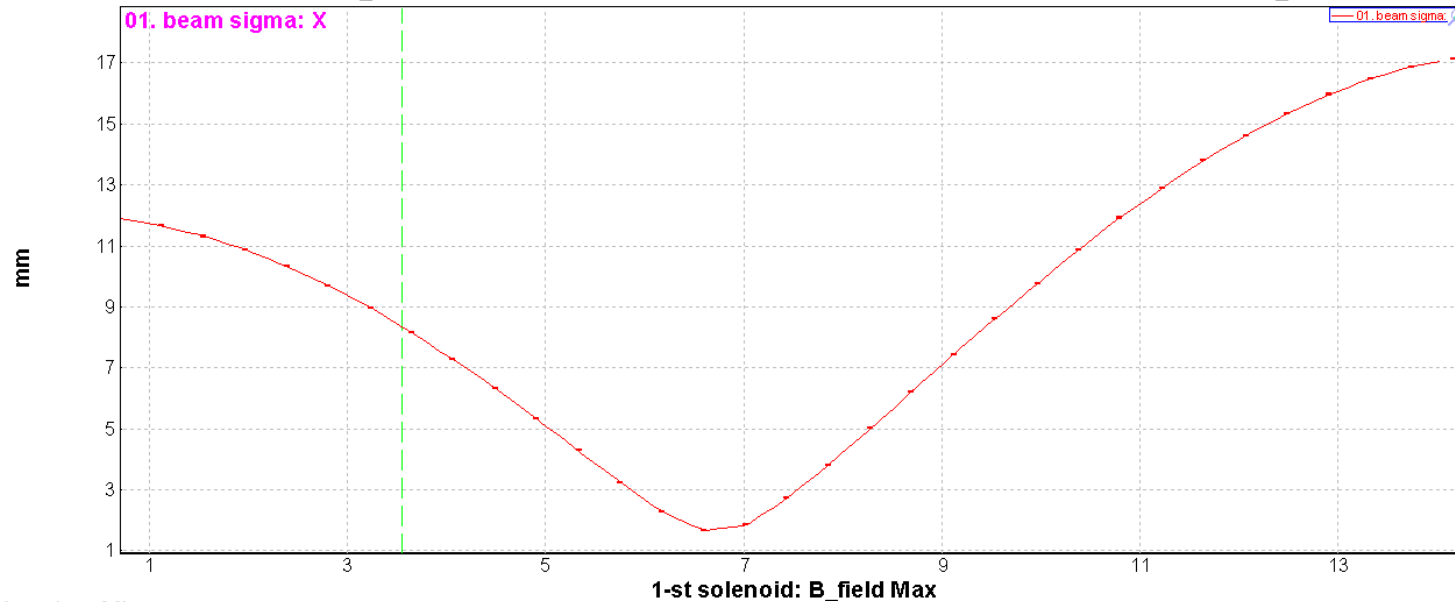
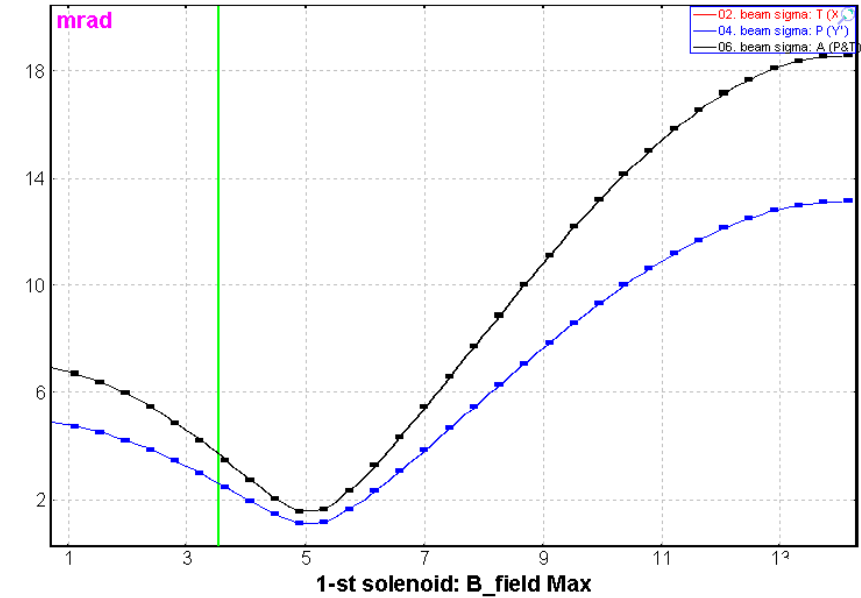
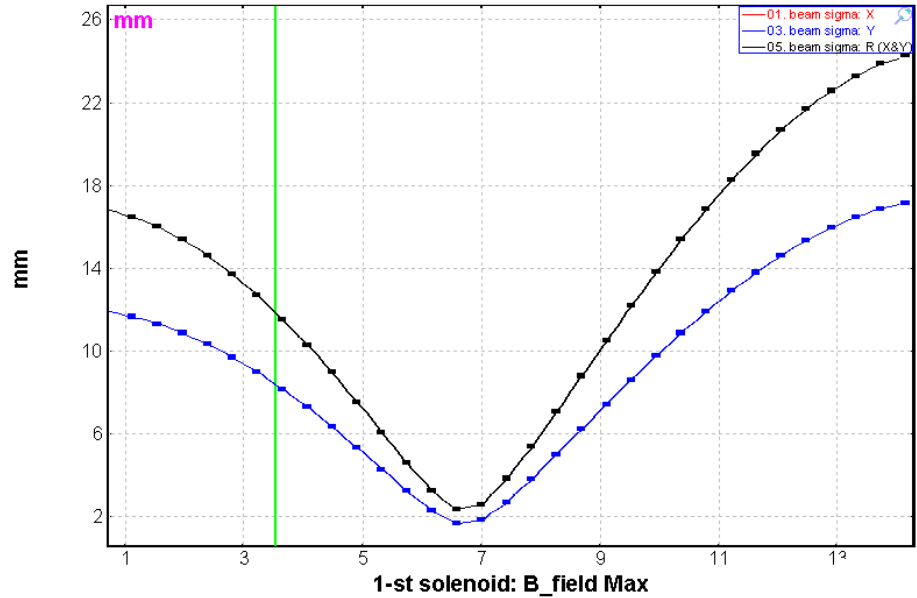
Function (1) from (2) at (3)

Function of
19. matrix: X/X
01. beam sigma: X
02. beam sigma: T (X')
03. beam sigma: Y
04. beam sigma: P (Y')
05. beam sigma: R (X&Y)
06. beam sigma: A (P&T)
07. beam ray: X
08. beam ray: T (X')
09. beam ray: Y
10. beam ray: P (Y')
11. beam ray: R (X&Y)
12. beam ray: A (P&T)
13. ray trace: X
14. ray trace: T (X')
15. ray trace: Y
16. ray trace: P (Y')
17. ray trace: R (X&Y)
18. ray trace: A (P&T)
19. matrix: X/X
20. matrix: X/T
21. matrix: X/Y
22. matrix: X/P
23. matrix: T/X
24. matrix: T/T
25. matrix: T/Y
26. matrix: T/P
27. matrix: Y/X
28. matrix: Y/T
29. matrix: Y/Y
30. matrix: Y/P
31. matrix: P/X
32. matrix: P/T
33. matrix: P/Y
34. matrix: P/P
35. Field: BH
36. Field: BZ

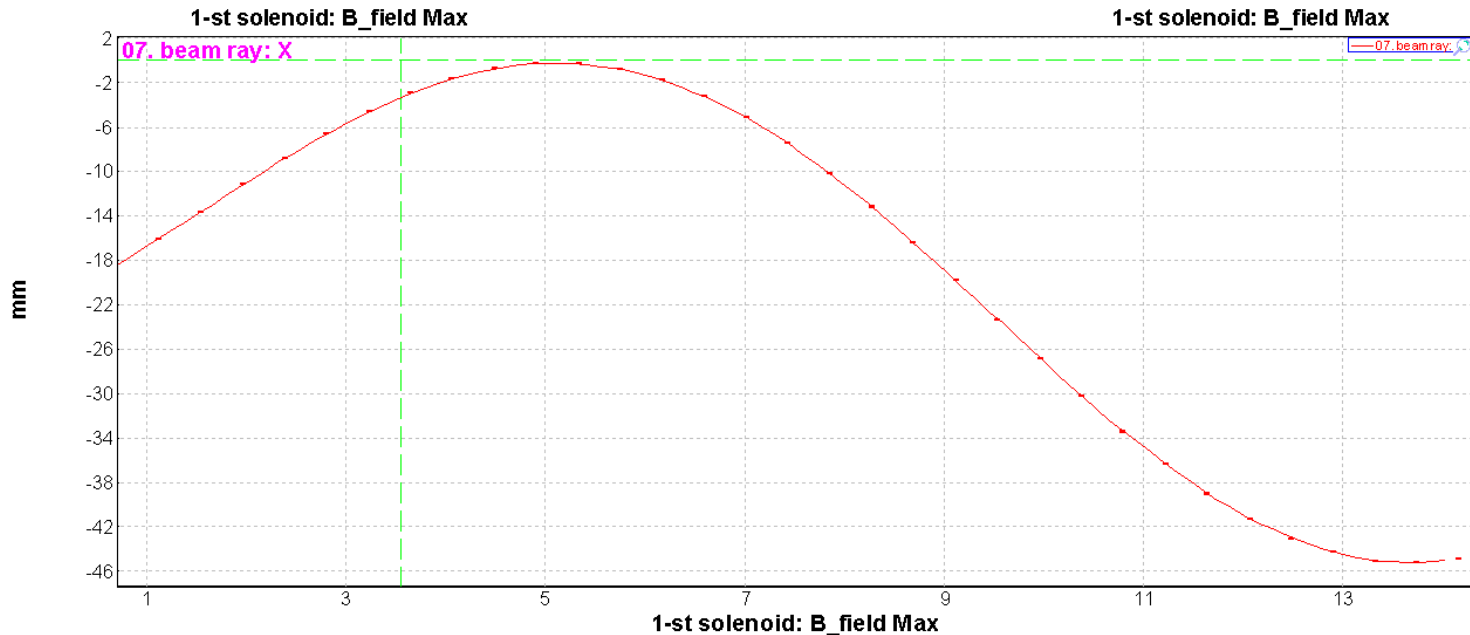
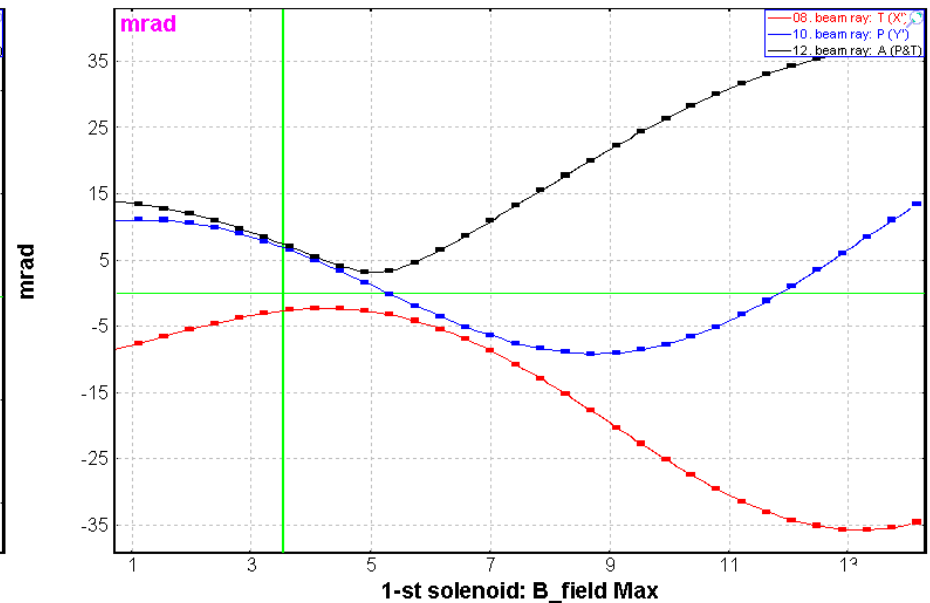
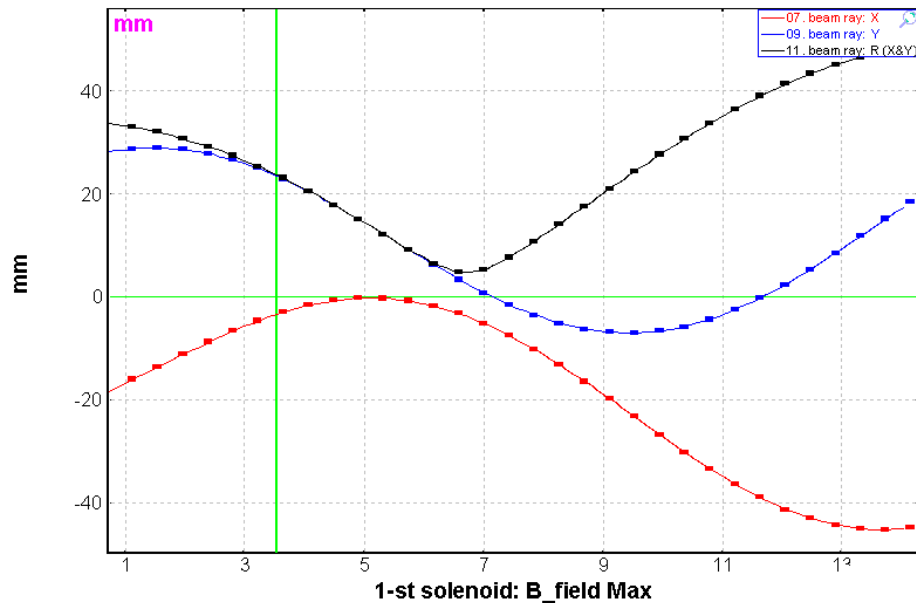
from
1-st solenoid: B_field Max
1-st solenoid: B_field Max
1-st solenoid: I (Current)
1-st solenoid: Coil Length
1-st solenoid: Effective Radius
1-st solenoid: 1-st half
1-st solenoid: 2-nd half
2-nd solenoid: B_field Max
2-nd solenoid: I (Current)
2-nd solenoid: Coil Length
2-nd solenoid: Effective Radius
2-nd solenoid: 1-st half
2-nd solenoid: 2-nd half
3-nd solenoid: B_field Max
3-nd solenoid: I (Current)
3-nd solenoid: Coil Length
3-nd solenoid: Effective Radius
3-nd solenoid: 1-st half
3-nd solenoid: 2-nd half
Fragment energy (MeV/u)

at
1.877 m
2-nd solenoid: x0
1-st solenoid: xU
1-st solenoid: x1L
1-st solenoid: x1R
1-st solenoid: xC
1-st solenoid: x2L
1-st solenoid: x2R
1-st solenoid: xF
2-nd solenoid: x0
2-nd solenoid: x1L
2-nd solenoid: x1R
2-nd solenoid: xC
2-nd solenoid: x2L
2-nd solenoid: x2R
2-nd solenoid: xF
3-nd solenoid: xU
3-nd solenoid: x1L
3-nd solenoid: x1R
3-nd solenoid: xC
3-nd solenoid: x2L
3-nd solenoid: x2R
3-nd solenoid: xF
Distance to plot rays

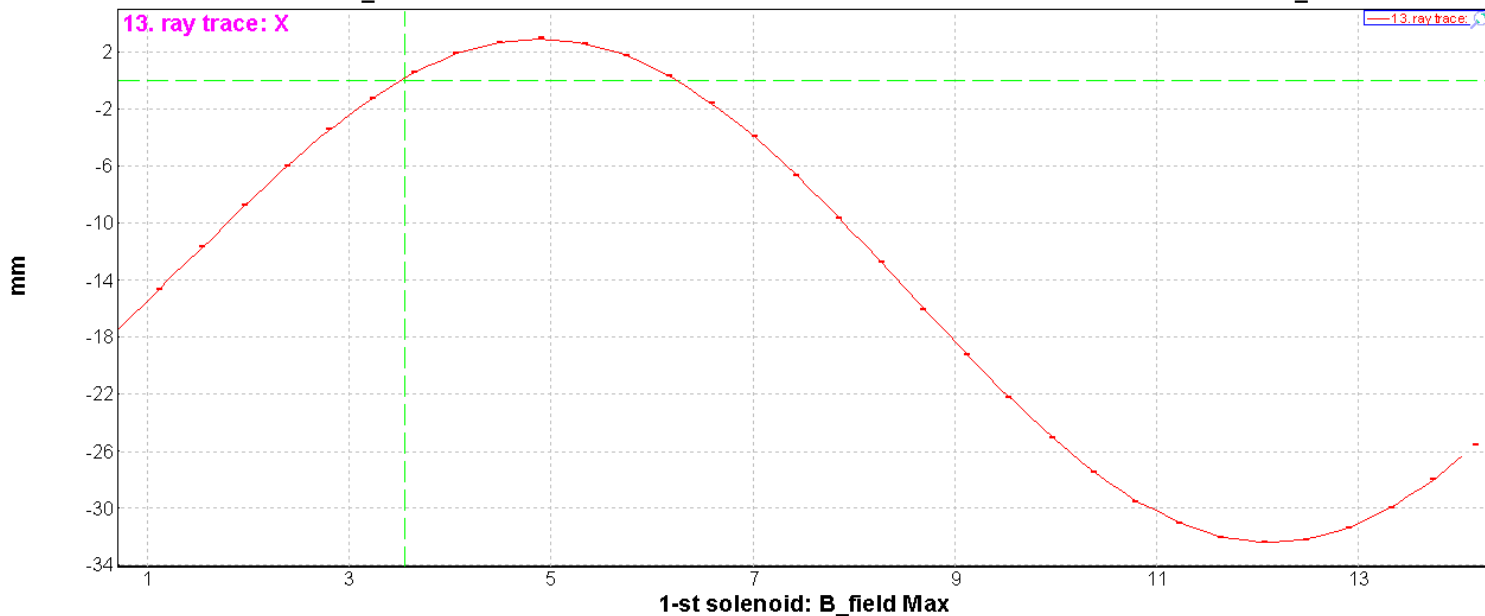
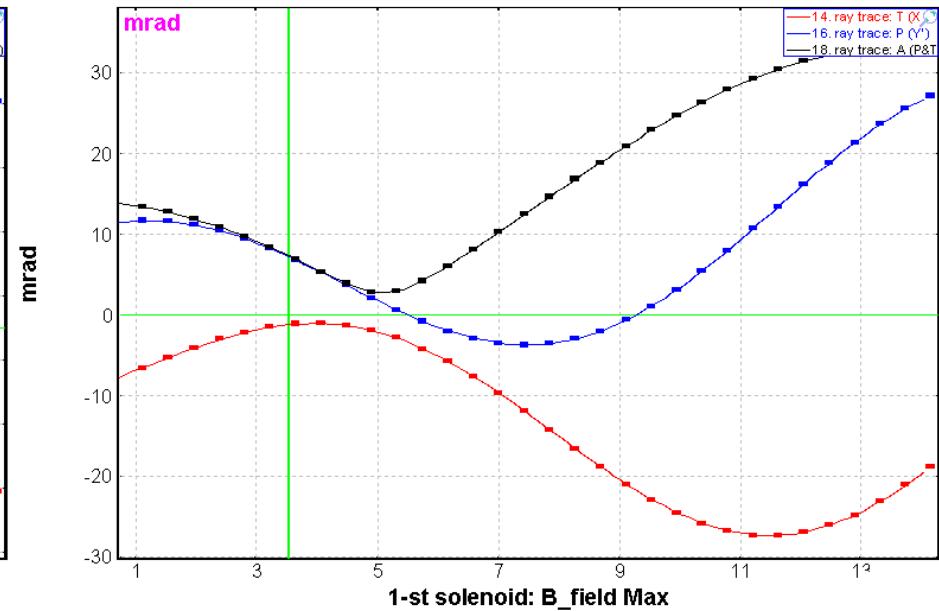
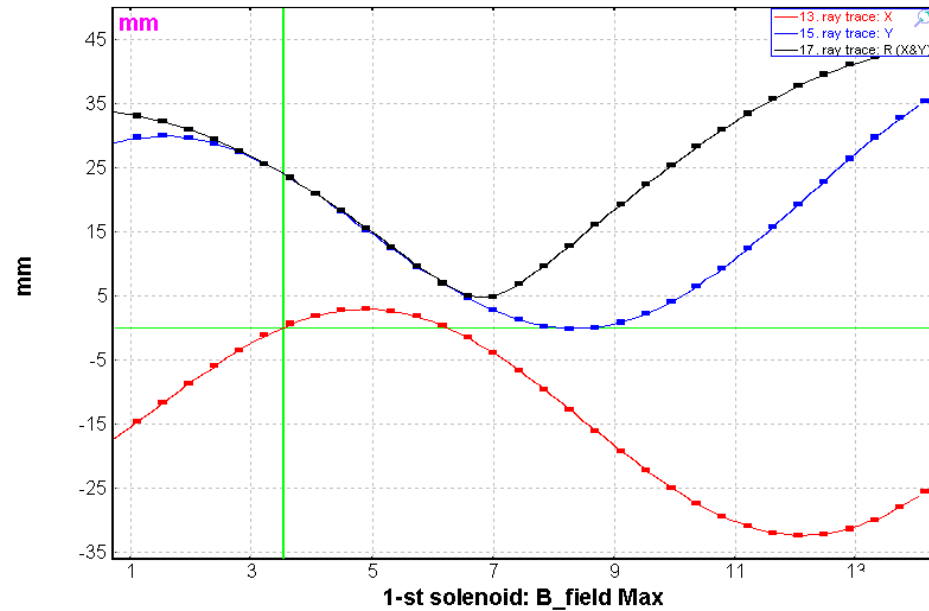
Beam Sigma from "1-st solenoid: B_field Max"
 1-st solenoid: xF ; Z = 2.400 m



Matrix Rays from "1-st solenoid: B_field Max"
 1-st solenoid: xF ; Z = 2.400 m

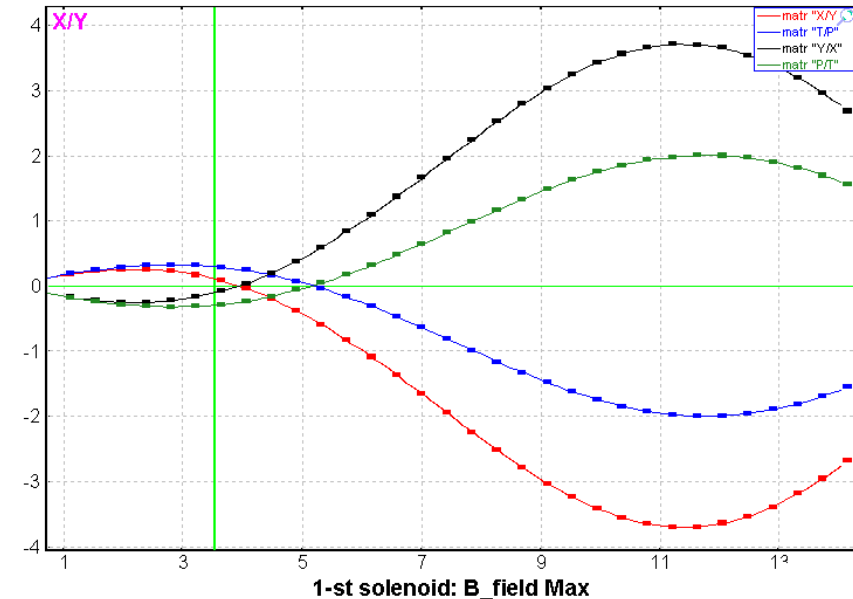
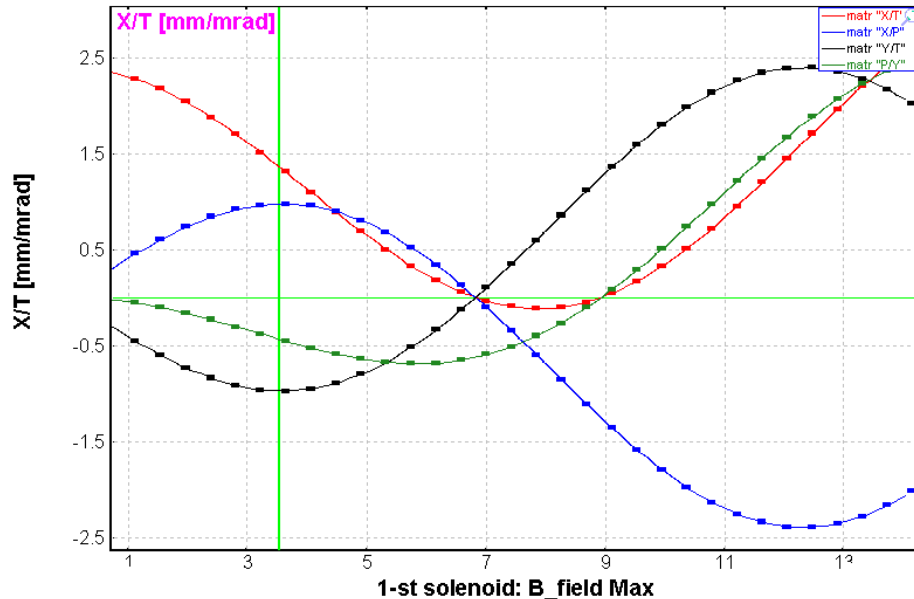
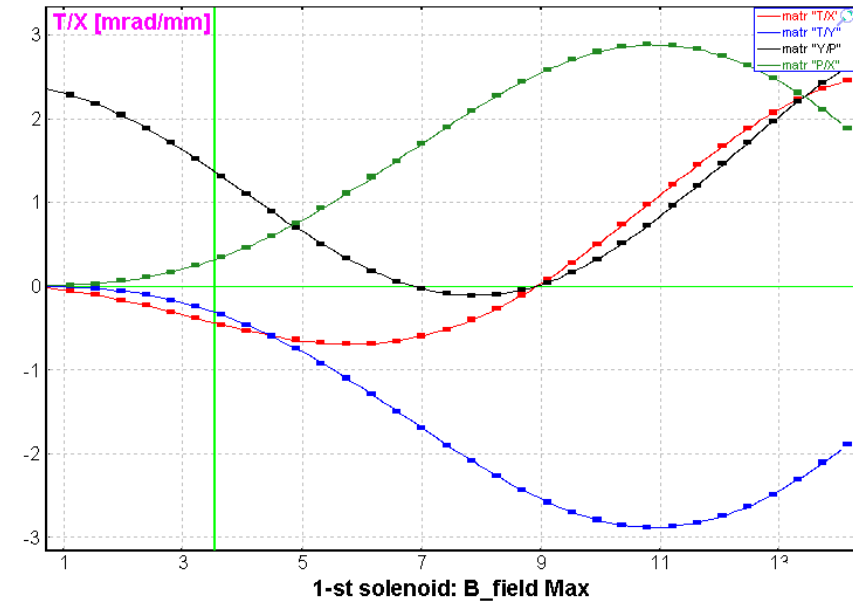
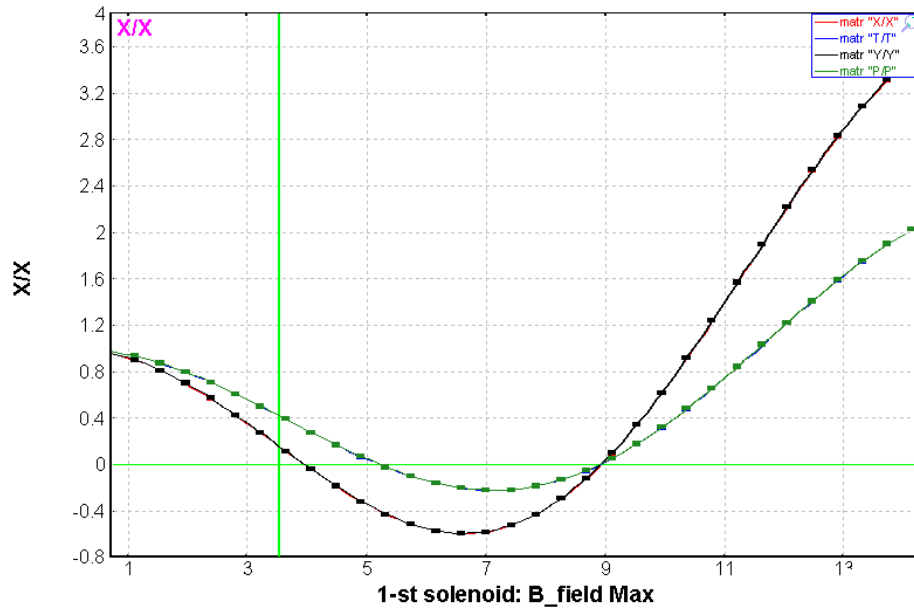


Trace rays from "1-st solenoid: B_field Max"
 1-st solenoid: xF ; Z = 2.400 m

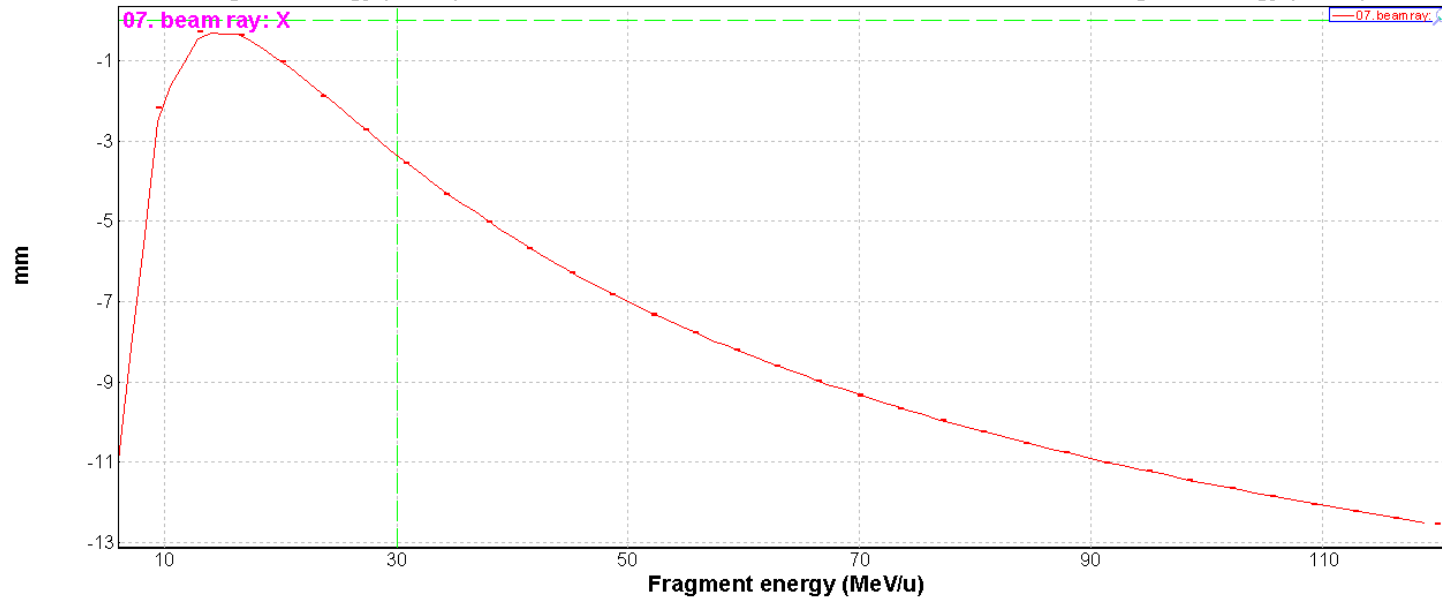
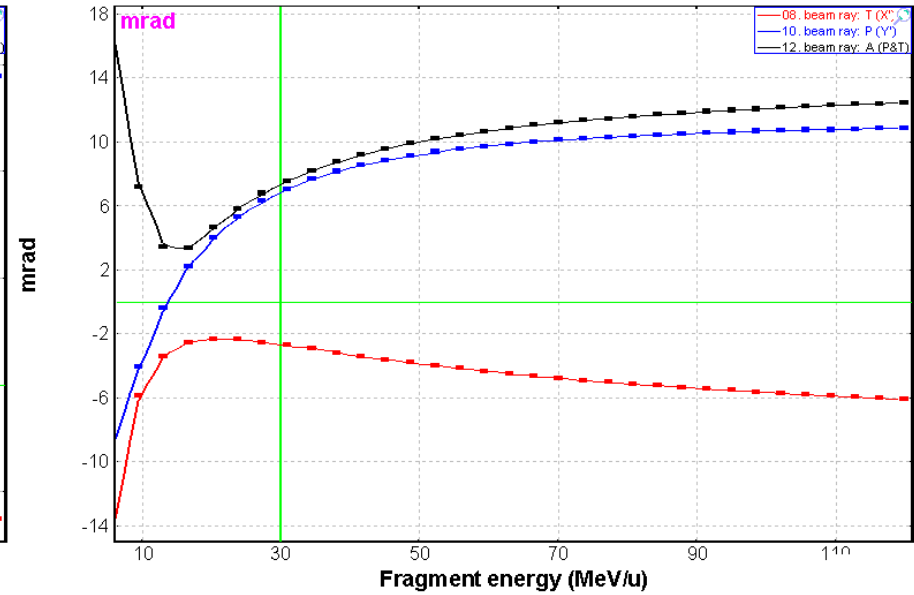
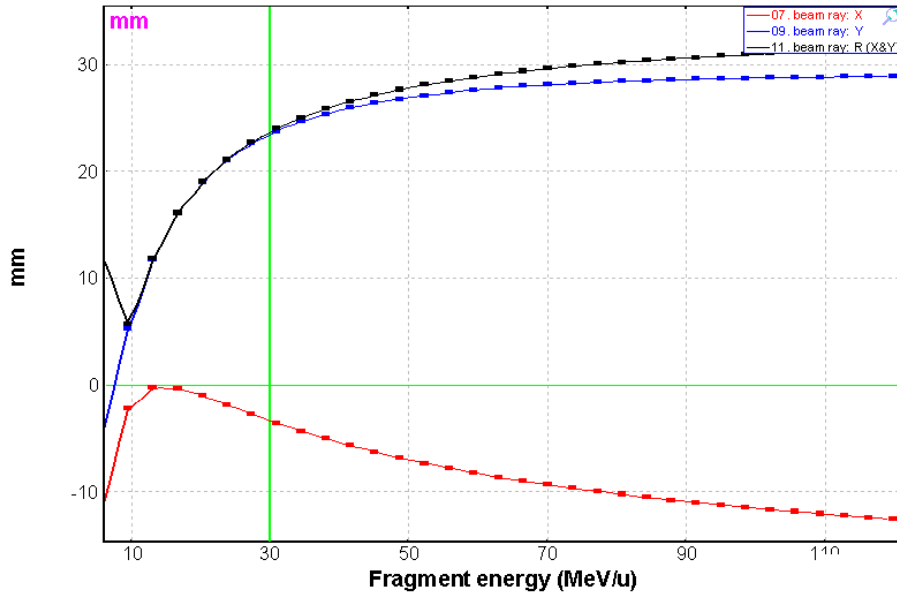


Matrix coefficients from B_field_max at 1xF

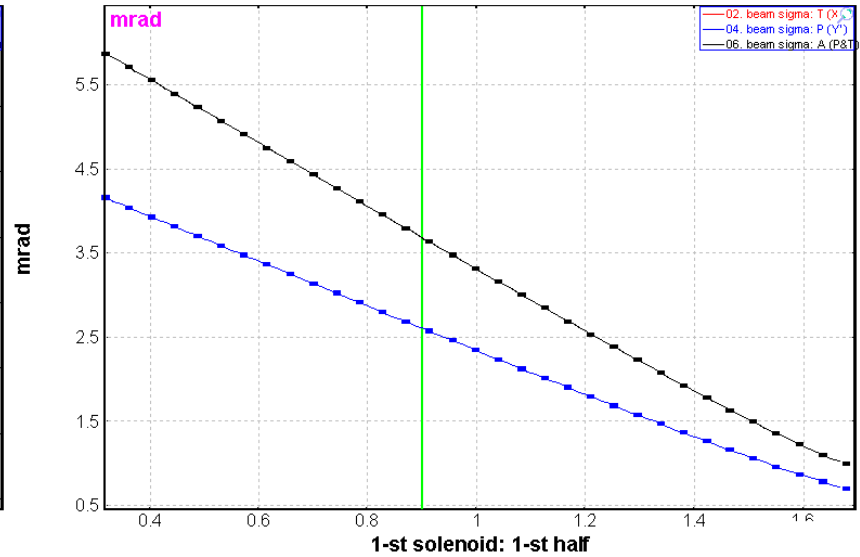
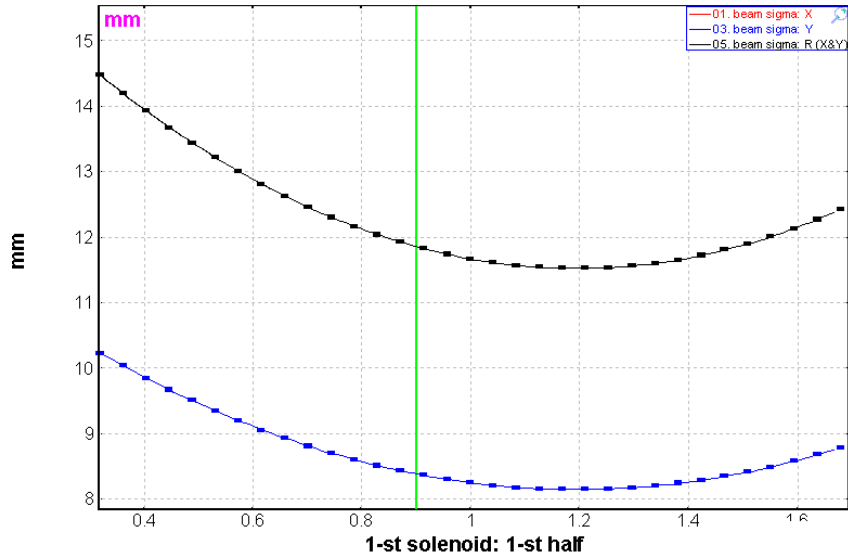
Matrix coefficients from "1-st solenoid: B_field Max"
 1-st solenoid: xF ; Z = 2.400 m



Matrix Rays from "Fragment energy (MeV/u)"
 1-st solenoid: xF ; Z = 2.400 m

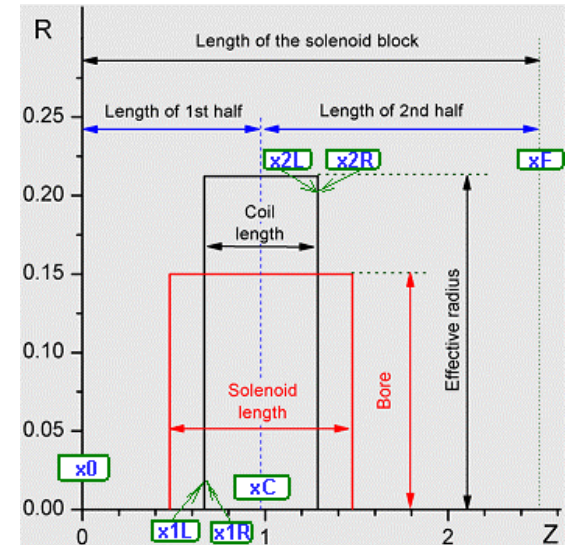


Beam Sigma from "1-st solenoid: 1-st half"
 1-st solenoid: xF ; Z = 2.400 m

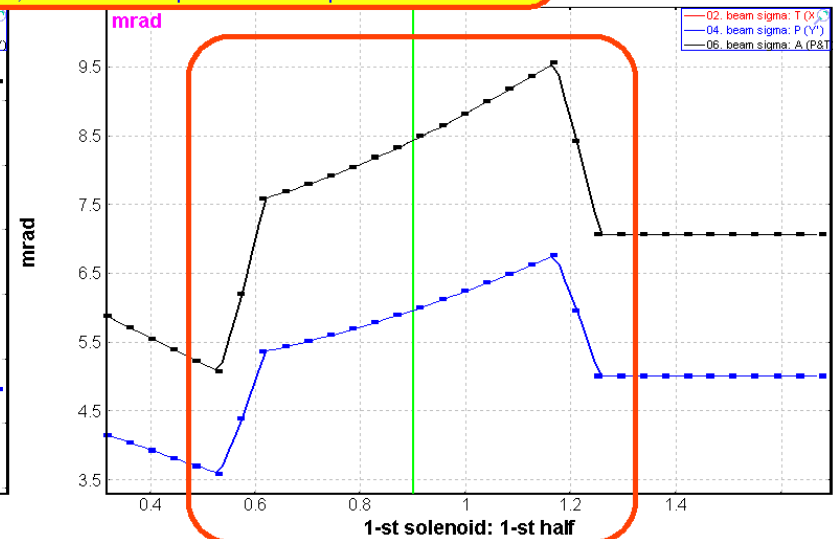
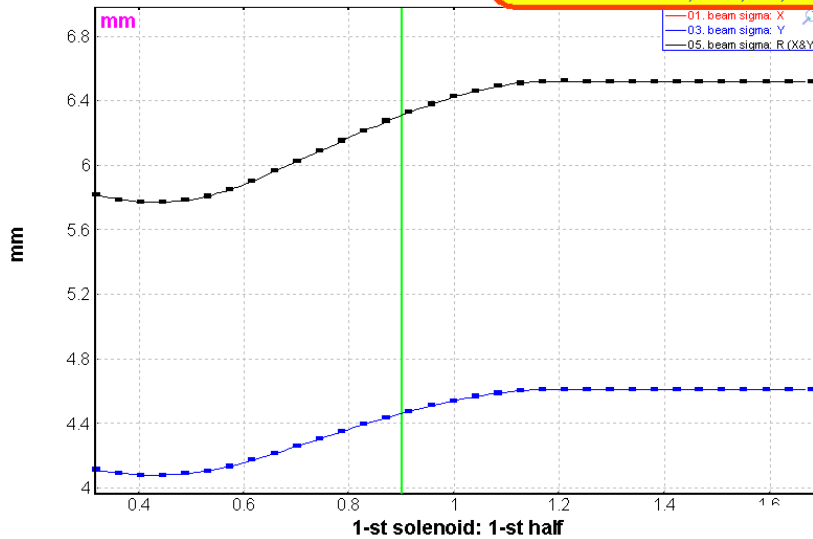


1st half + 2nd half = Solenoid length = const

Varying 1st half, we change 2nd half



Beam Sigma from "1-st solenoid: 1-st half"
 1-st solenoid: xC ; Z = 0.900 m
 Attention!!! x1L, x1R, xC, x2L, x2R on these plots are not equal to shown Z!



Varying 1st half, or 2nd half, or Coil length
 we move x1L, x1R, xC, x2L, x2R points.

The code takes values (beam sigma, trace rays etc)
 at Z corresponding to initial x** point

