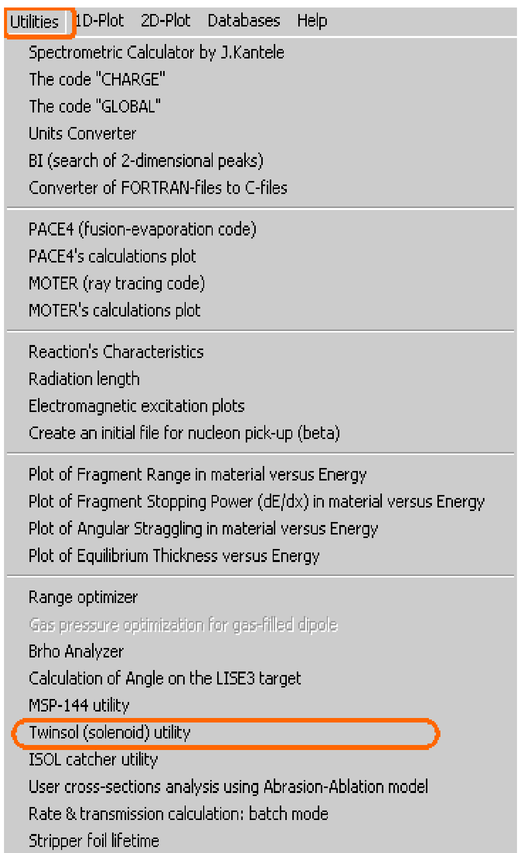
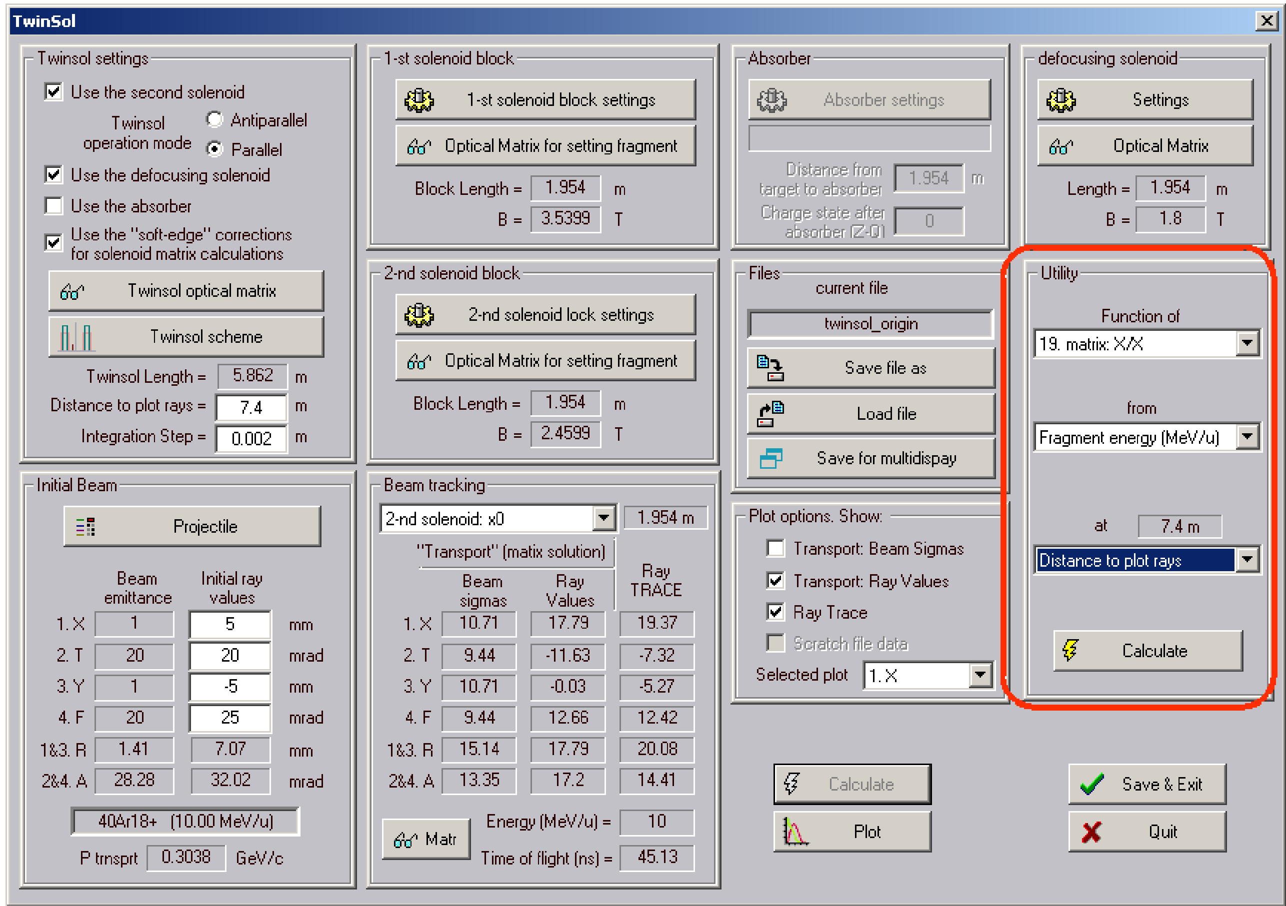
Update of the TwinSol utility

version 8.3.45

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



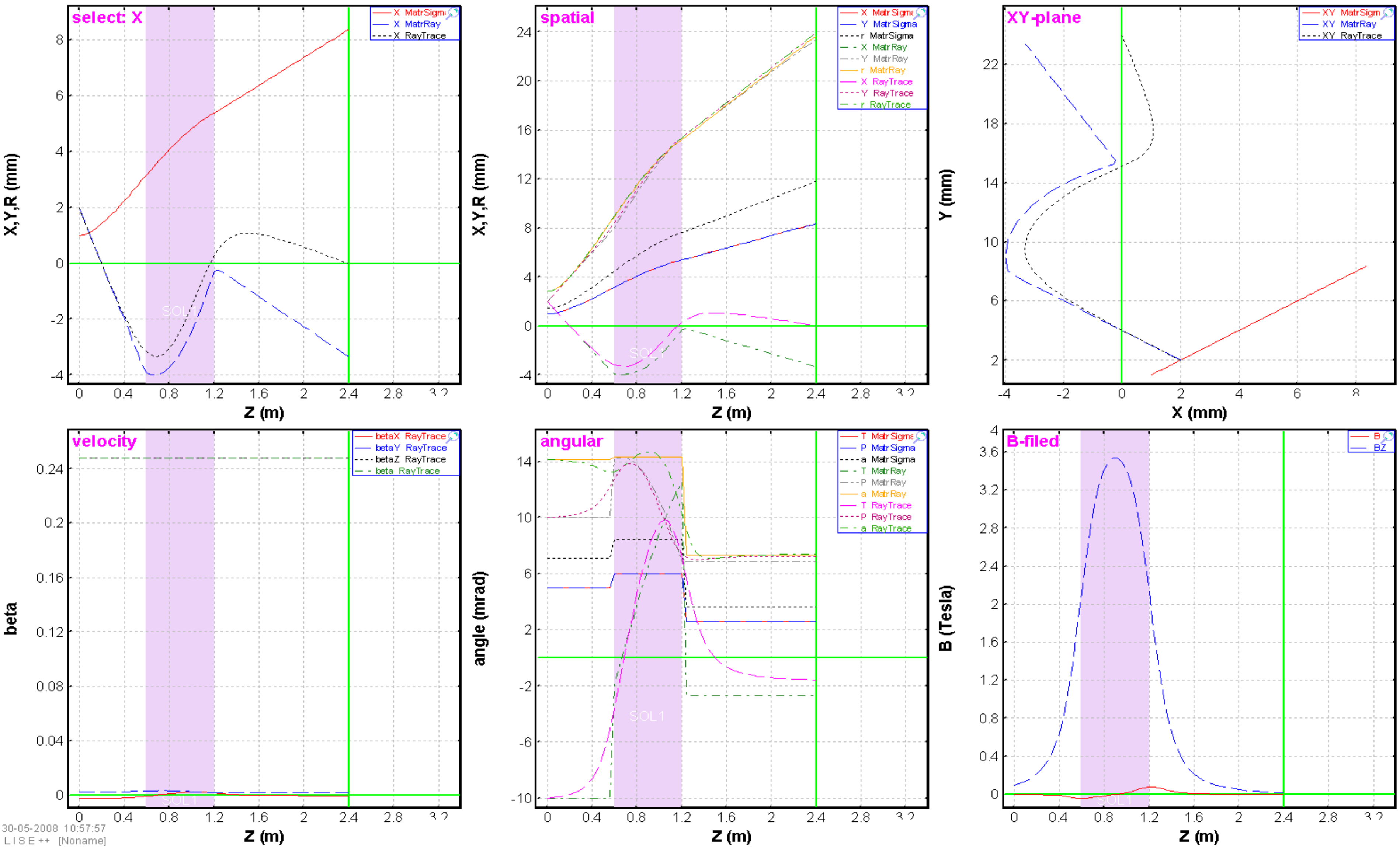


The code operates under MS Windows environment and provides a highly user-friendly interface.
It can be freely downloaded from the following internet addresses:
http://www.nscl.msu/edu/lise

Envelope (v.7.9). Example

Twin Sol

$^{40}Ar^{18+}$ (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)

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LISE++

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: BR
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)

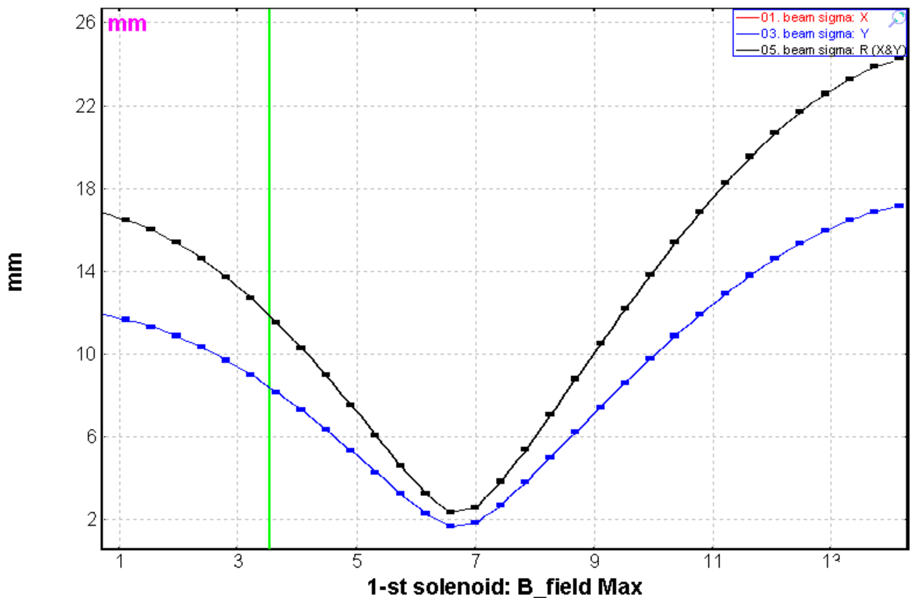
at 1.877 m

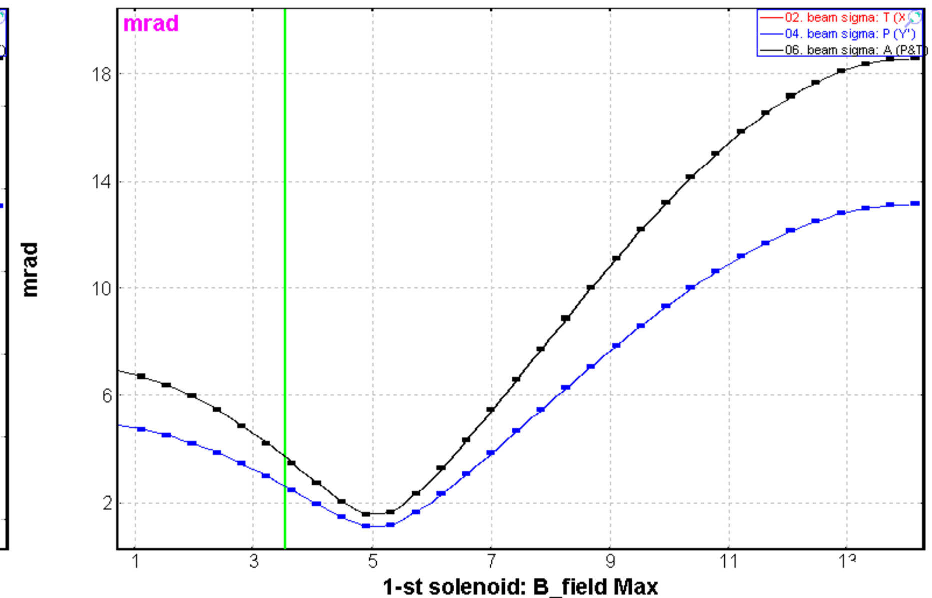
2-nd solenoid: x0

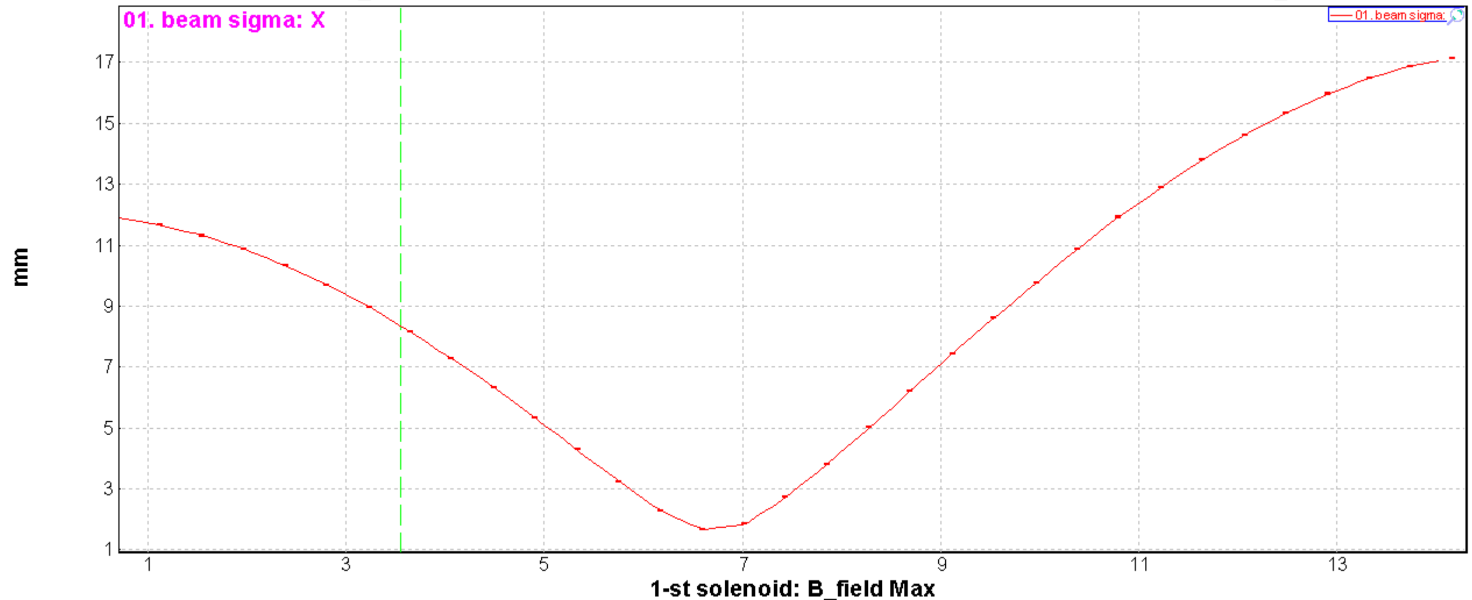
- 1-st solenoid: x0
- 1-st solenoid: x1L
- 1-st solenoid: x1R
- 1-st solenoid: xC
- 1-st solenoid: x2L
- 1-st solenoid: x2R
- 1-st solenoid: xF
- 2-nd solenoid: x0
- 2-nd solenoid: x1L
- 2-nd solenoid: x1R
- 2-nd solenoid: xC
- 2-nd solenoid: x2L
- 2-nd solenoid: x2R
- 2-nd solenoid: xF
- 3-nd solenoid: x0
- 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 B_field_max at 1xF

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

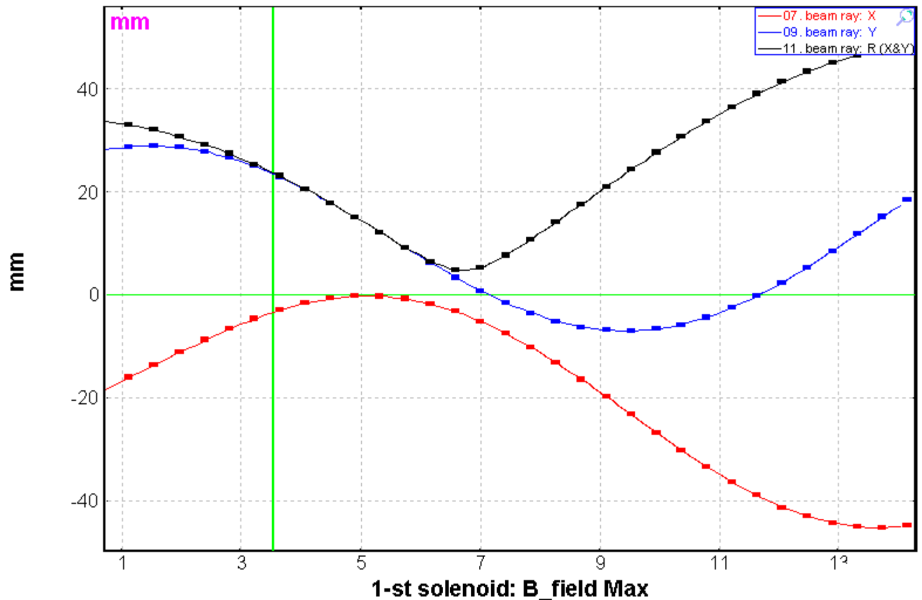


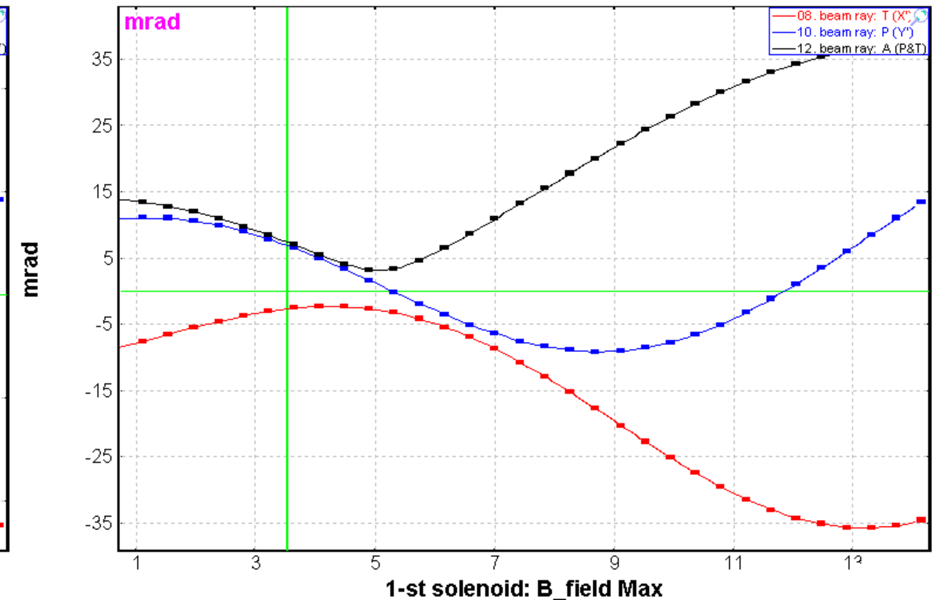


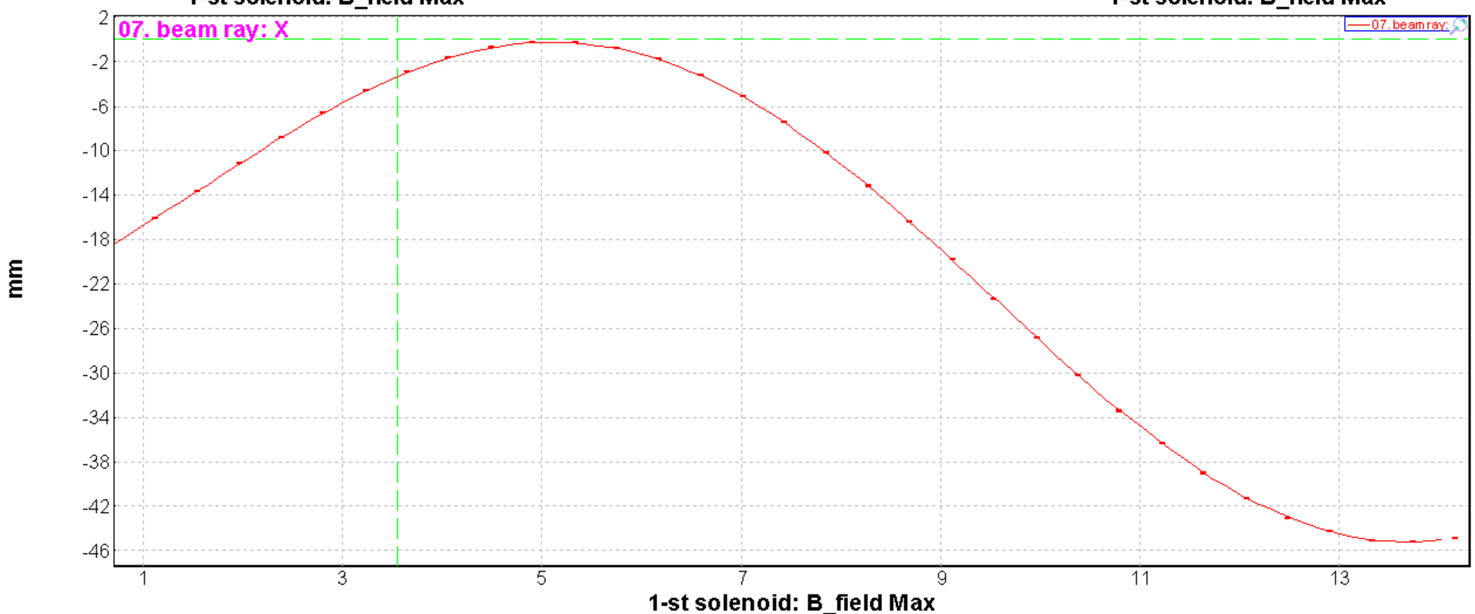


Matrix Rays from B_field_max at 1xF

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

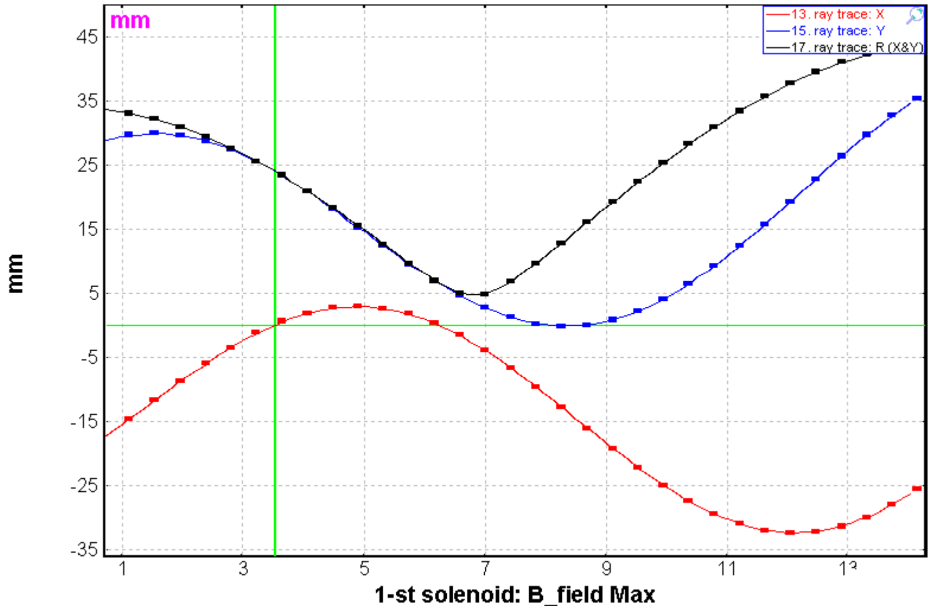


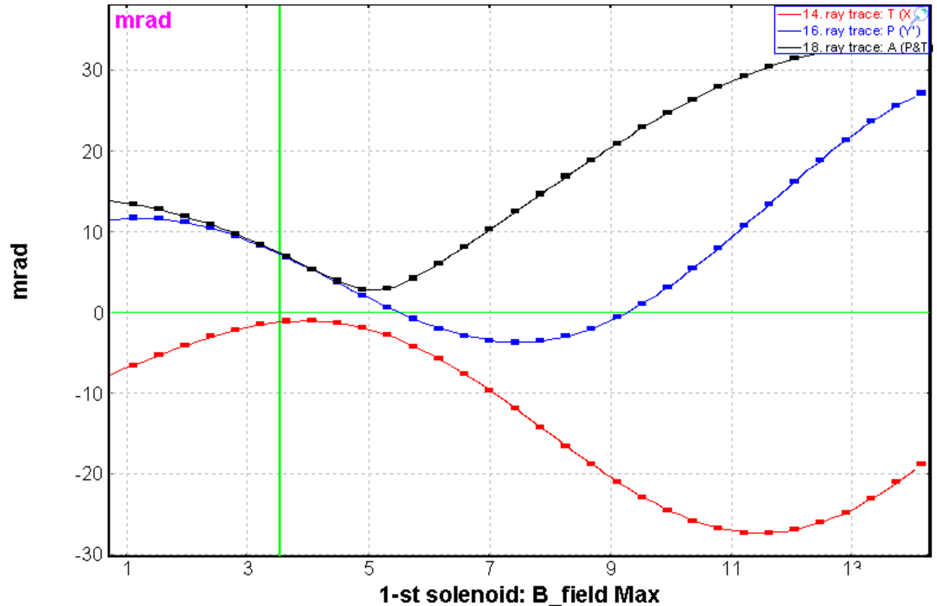


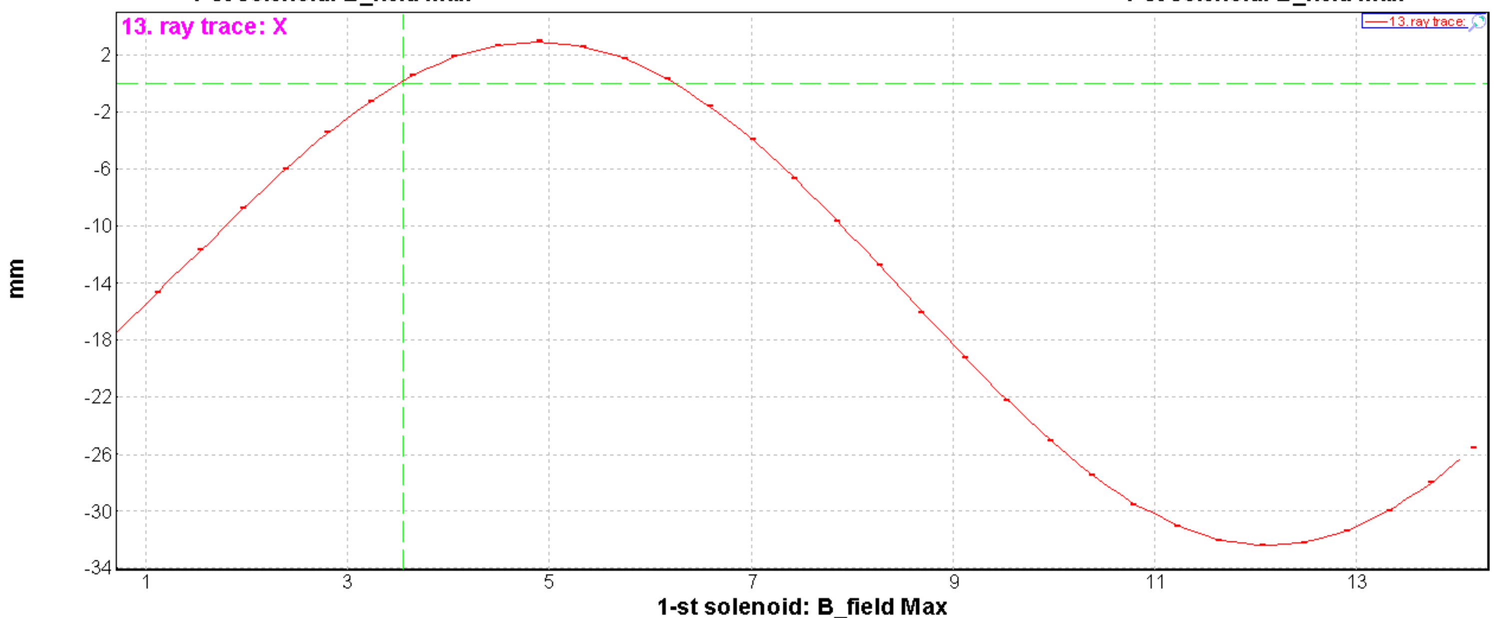


Trace Rays from B_field_max at 1xF

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

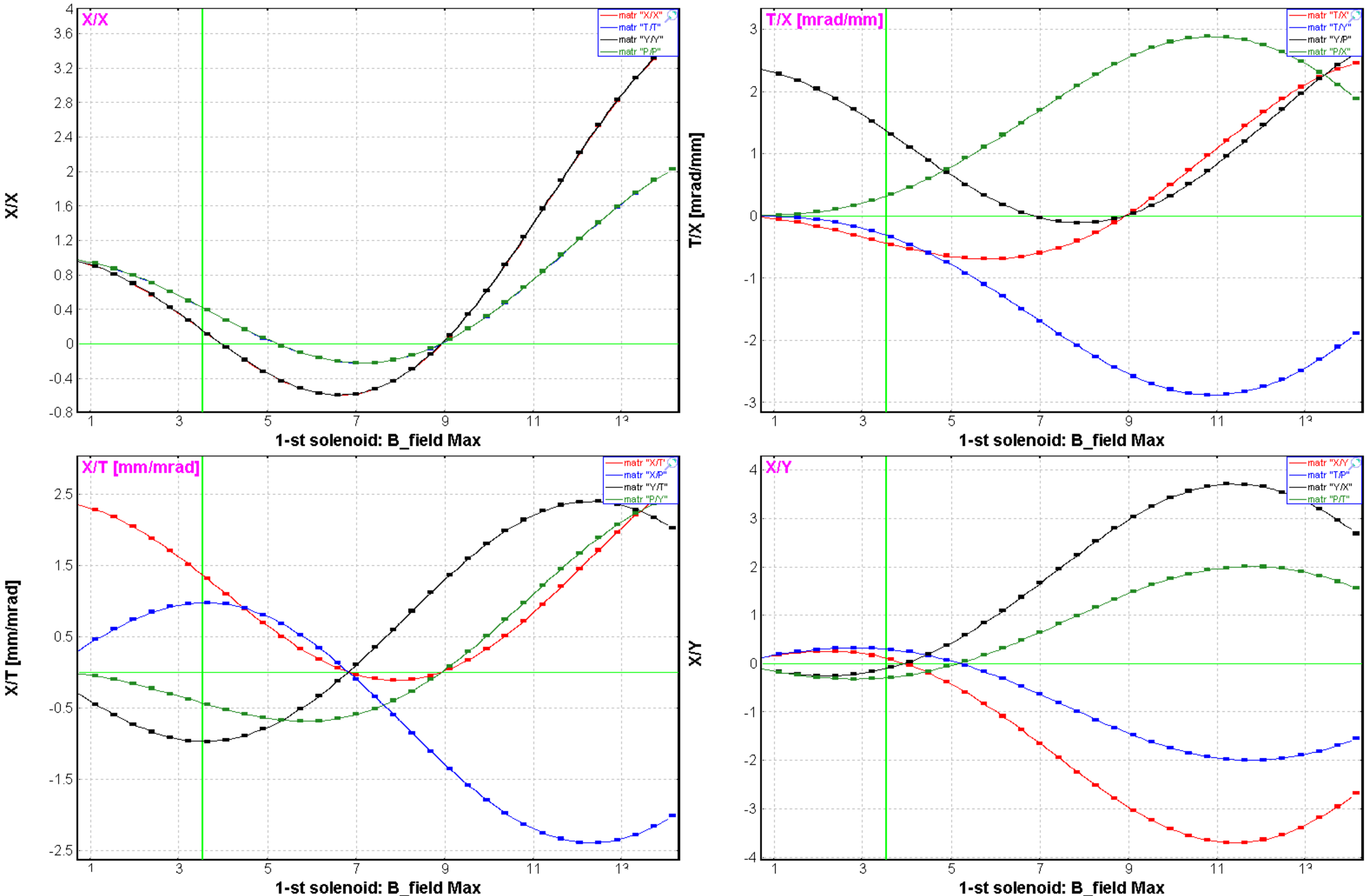






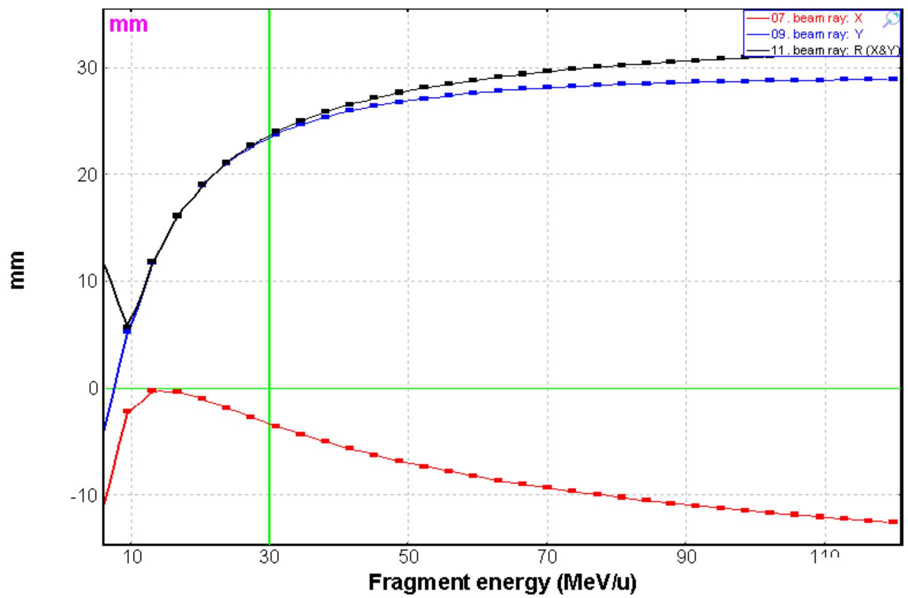
Matrix coefficients from B_field_max at 1xF

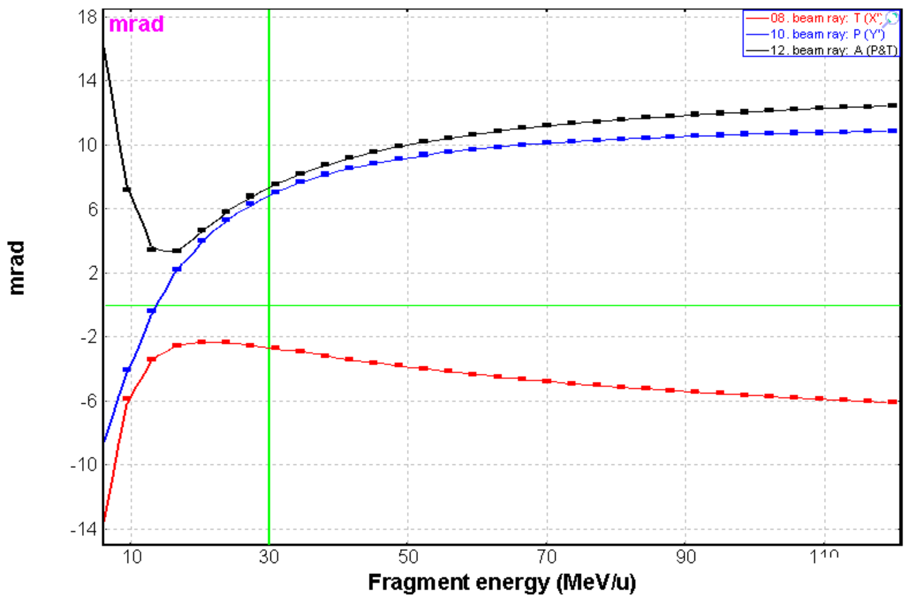
Matrix coefficients from "1-st solenoid: B_field Max"
1-st solenoid: xF ; Z = 2.400 m

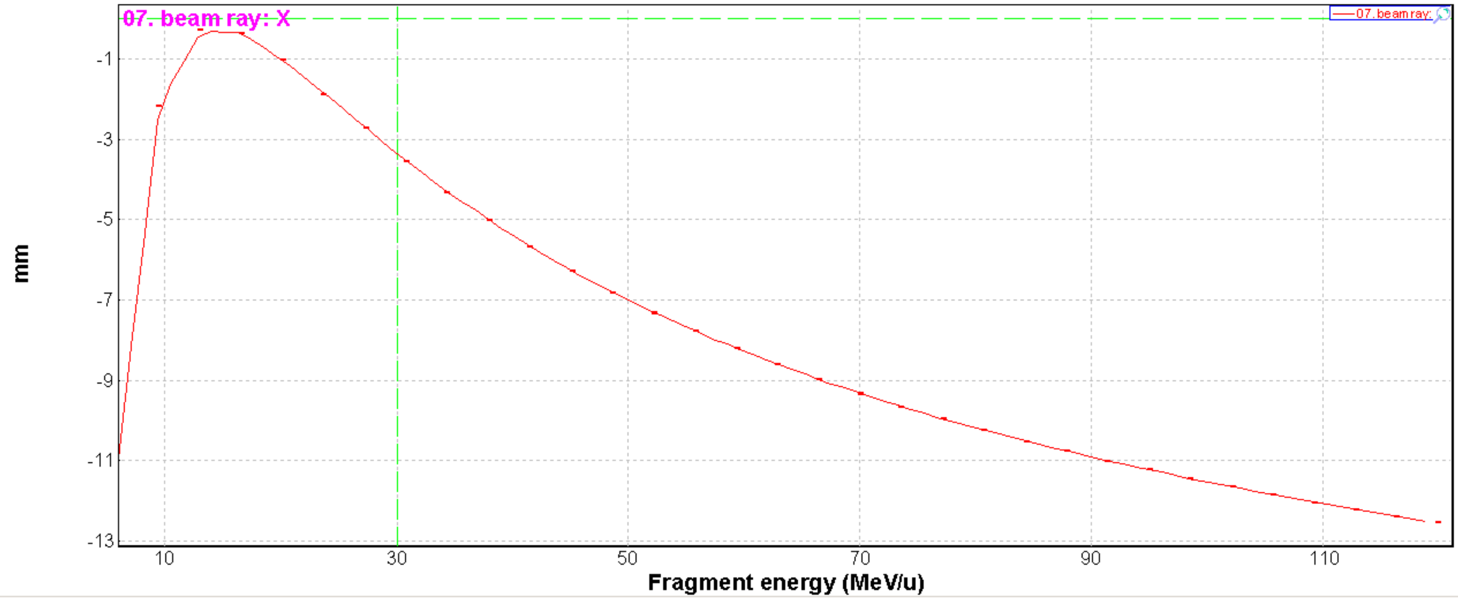


Matrix Rays from Fragment Energy at 1xF

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

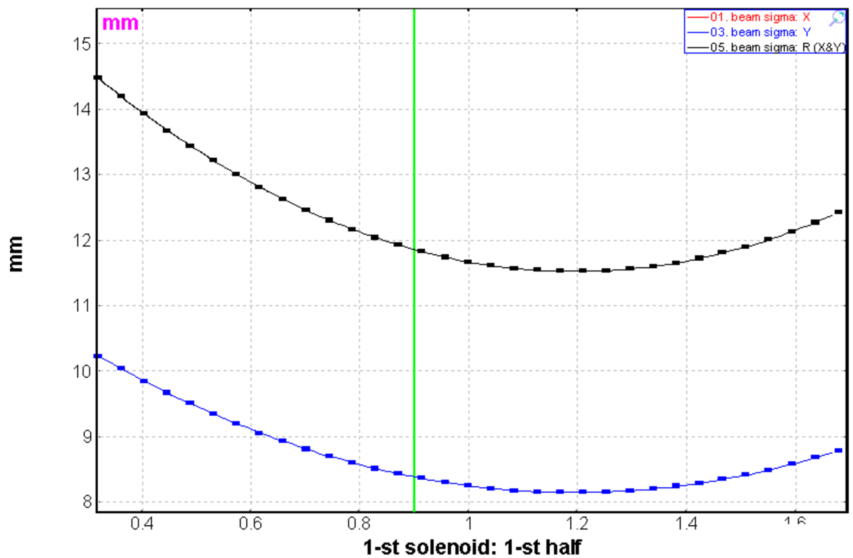


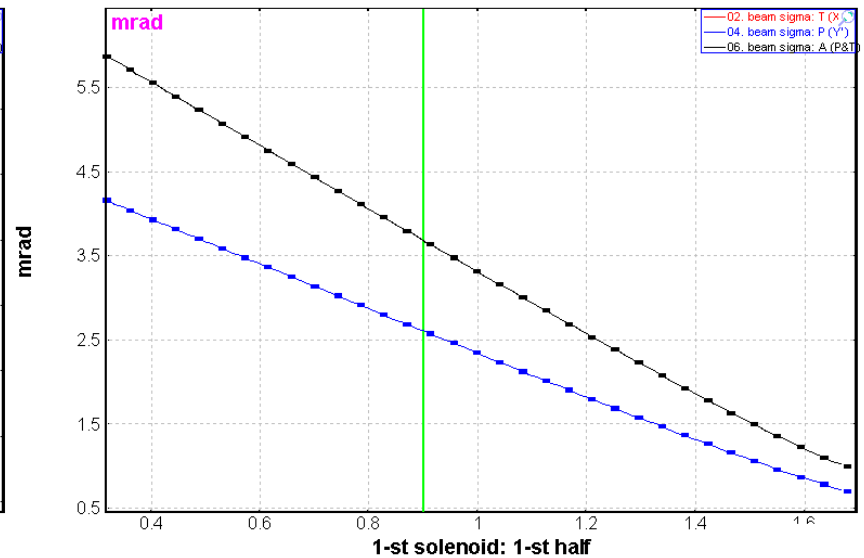




Beam Sigma from 1-st half length at 1xF

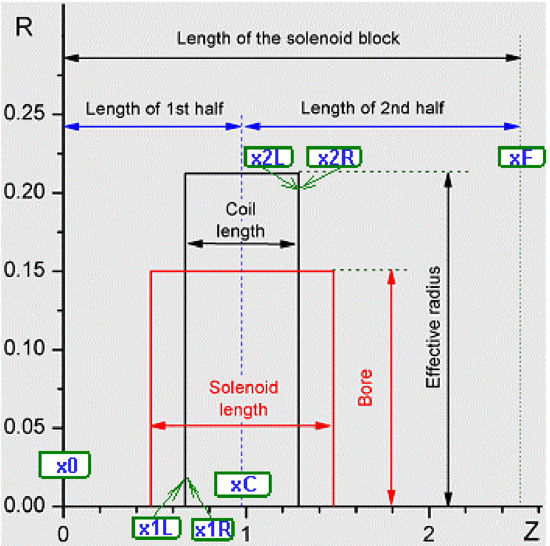
Beam Sigma from "1-st solenoid: 1-st half"
1-st solenoid: xF ; Z = 2.400 m



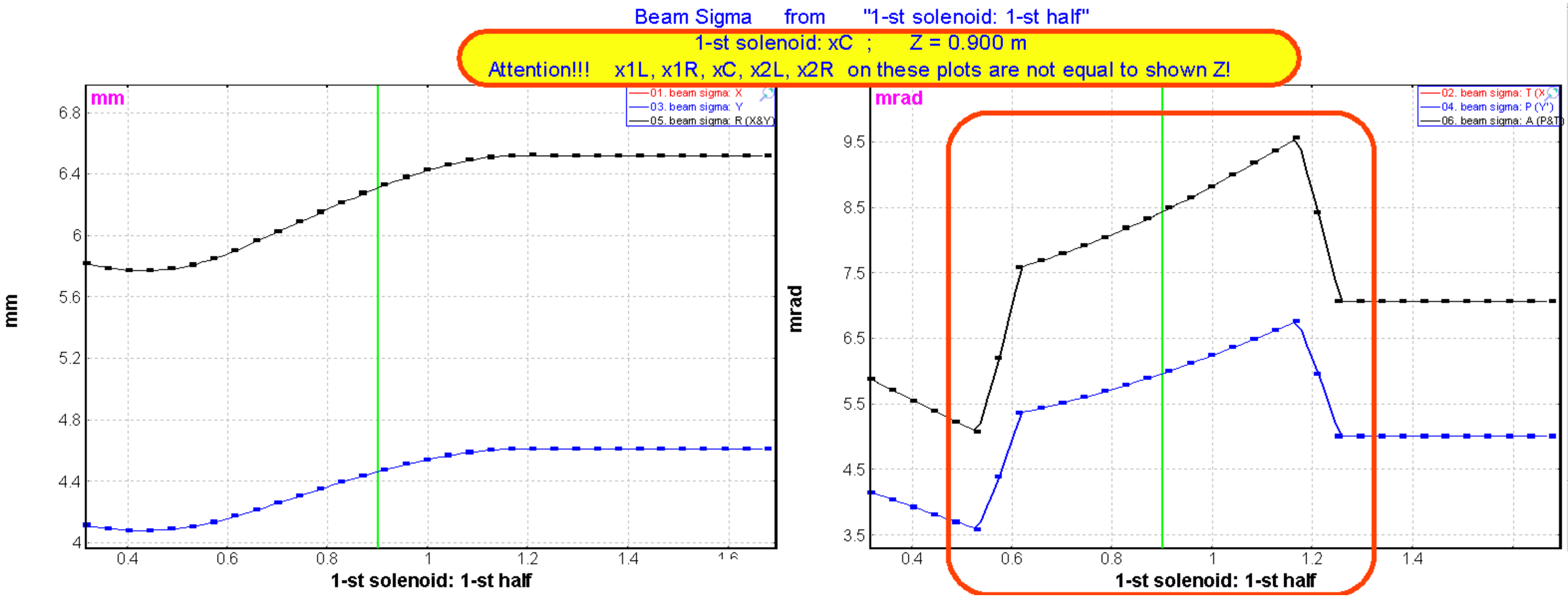


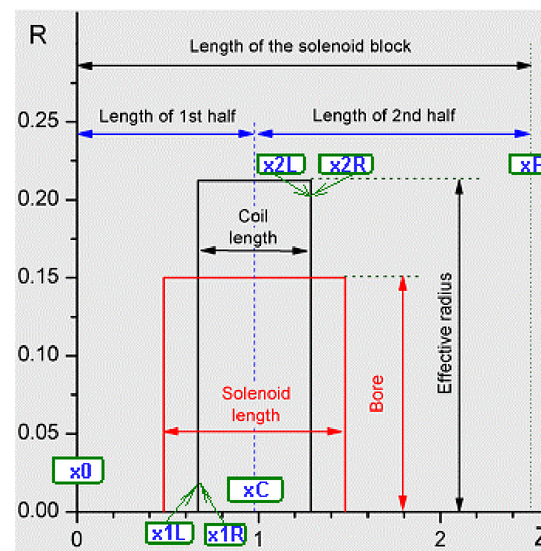
1st half + 2nd half = Solenoid length = const

Varying 1st half, we change 2nd half



Beam Sigma from 1-st half length at 1xC





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**