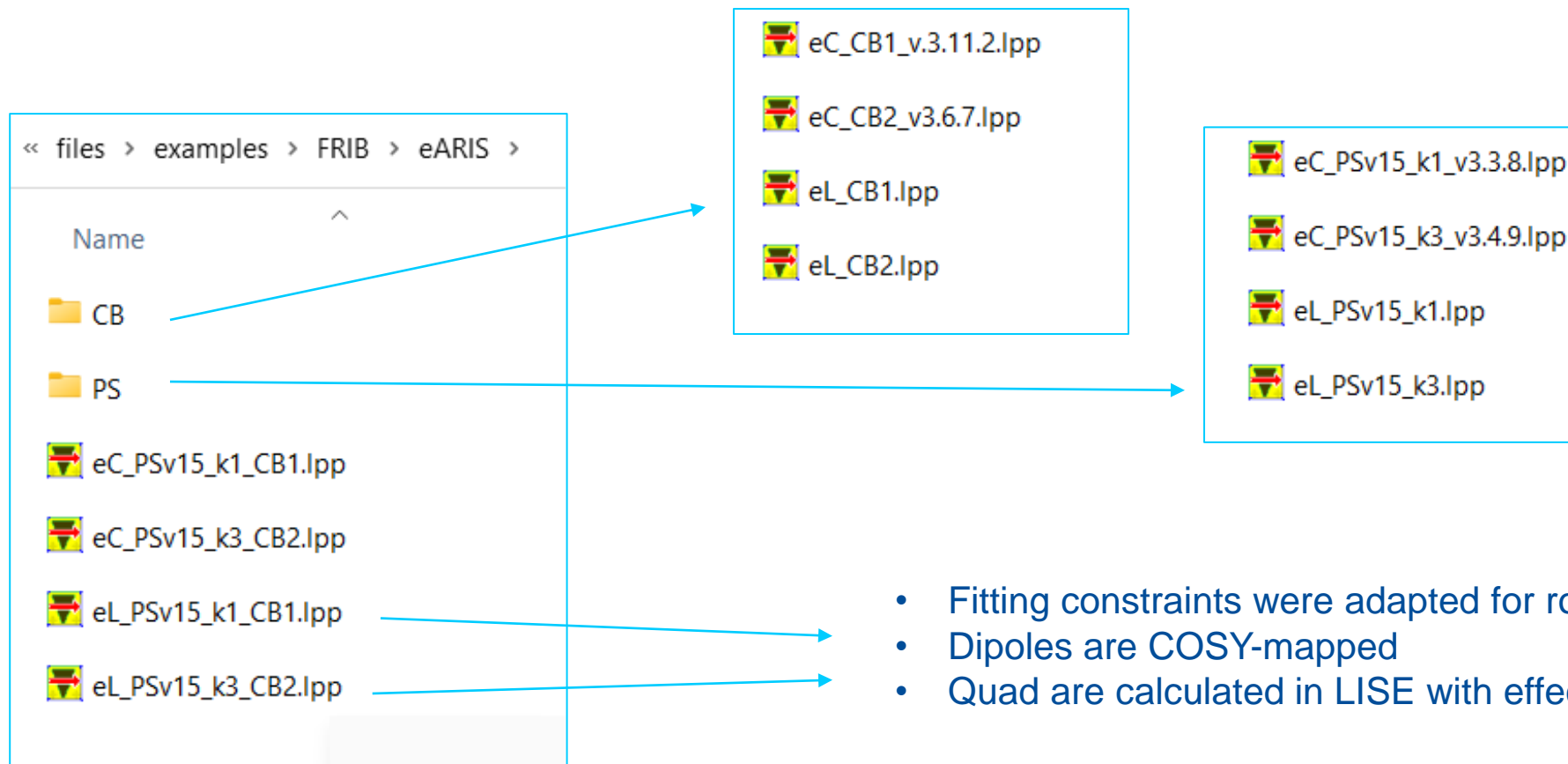


**v.16.12.3**  
03/21/23

[See v.16.11.13 “ARIS configurations update”](#)



- Fitting constraints were adapted for rotation blocks
- Dipoles are COSY-mapped
- Quad are calculated in LISE with effective length from calibration files

“eL” – extended LISE minimization  
“eC” – extended COSY (5<sup>th</sup> order)

“k1” & “k3” – compression mode (factor 3) & no  
“CB1” & “CB2” – high resolution & large acceptance

Experimental Settings | Physics Models | Calculat

- Projectile
- Target
- Stripper after Target
- Spectrometer Design
  - Optics
    - Tune spectrometer for the setting fragment on beam axis
    - Tune spectrometer for the setting fragment at middle of slit
    - OPTIMIZATION (optical element parameters fitting)
    - Manual recalculation of e-blocks matrices (only for Experts!)
    - Update matrices linked with COSY files
    - Multipole: set Action for all multipoles if Brho-value changes
      - no actions
      - recalculate automatically B (fields), keep the matrix [Recommended]
      - recalculate automatically the matrix keep B (fields)
    - Envelope plot
    - First order matrix elements: Plot
    - First order matrix elements: View & Print
  - Optic settings: FAST EDITING
    - Optic settings: View & Print
  - Brho (Erho) Analyser
  - The First- and Second- Order Matrix Elements for an Ideal Maget

Shane Watters:  
44 calibration files

Name	Ext
[.]	
FSQD_n2	cal
FSQE_n2	cal
FSQC_n2	cal
FSQA_n2	cal
FSQB_n2	cal
FSQ9_S2_202207_N71	cal
FSQ9_S2_202207_n2	cal
FSQ9_S1_202207_n2	cal
FSQ9_S1_202207_N73	cal
FSQ8_S3_202012_N81	cal
FSQ8_S2_202009_n2	cal
FSQ8_S3_202012_n2	cal
FSQ8_S2_202009	cal

0 k / 40 k in 0 / 44 file(s)

Multipole: WIQ1 <-> FS\_F1S1:Q\_D1013

Magnetic Multipole Settings

$L_{eff}$  (effective length) mode: <File> 0.73428 m

QUADrupole SEXTupole

B (field at pole tip) 7.52926 0 kG

Radius (pole tip) 10.4 10.4 cm

I (current) +485.106 set A

G (gradient) +7.2397 set T/m

Block settings, information

Block length 0.8255 m

Current (Real) Bp-value for the setting fragment 6 Tm

Setting fragment  $^{100}\text{Tc}$

calibration: I, B, Leff, G FSQ1\_2020\_n2

Multipole fixed Bp-value corresponding to the setting fragn (it will be used for scaling) 6 Tm

set current value from setup

B & S field values in Fitting

QUADrupole SEXTupole

Use in Fitting process

Use Bounds constraints

Lower bound -20 -20 kG

Upper bound 20 20 kG

if Brho-value has been changed then

no actions

recalculate automatically B (fields), keep the matrix [Recommended]

recalculate automatically the matrix keep B (fields)

Calculate 2nd order matrix elements

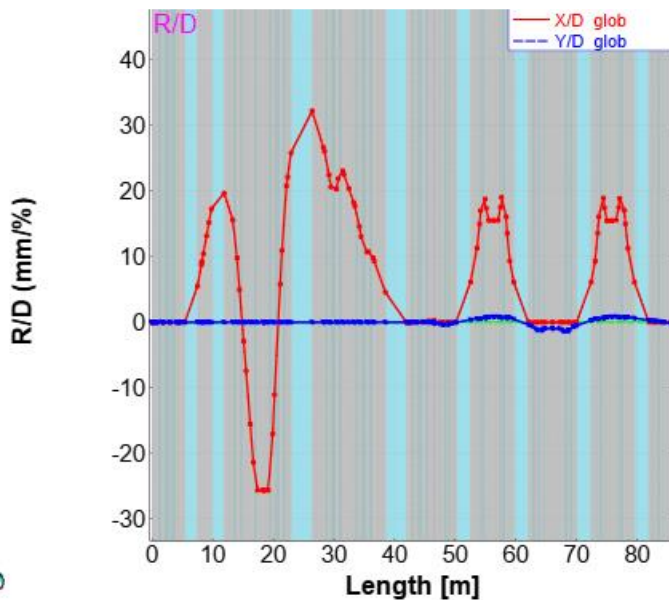
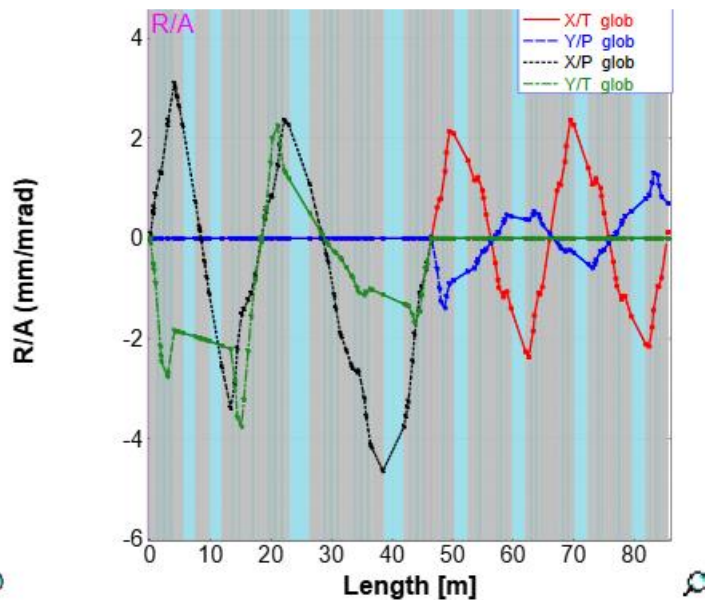
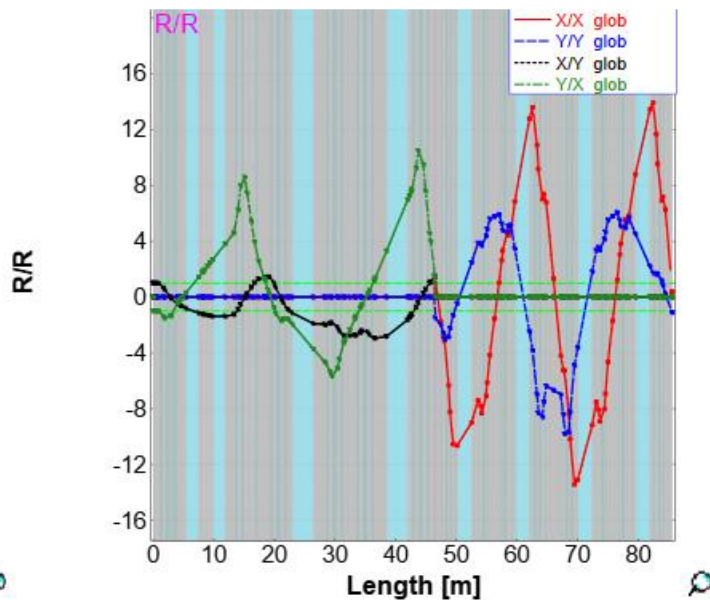
Allow remote matrices recalculation

Recalculate B (field) for the fragment current Brho

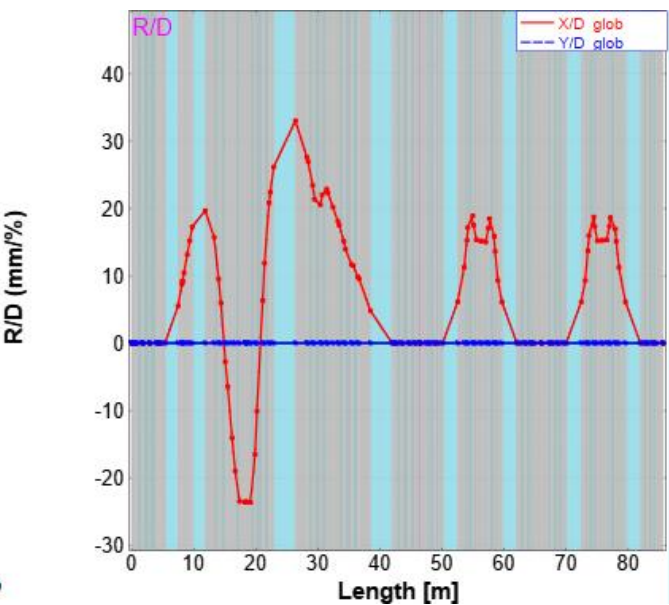
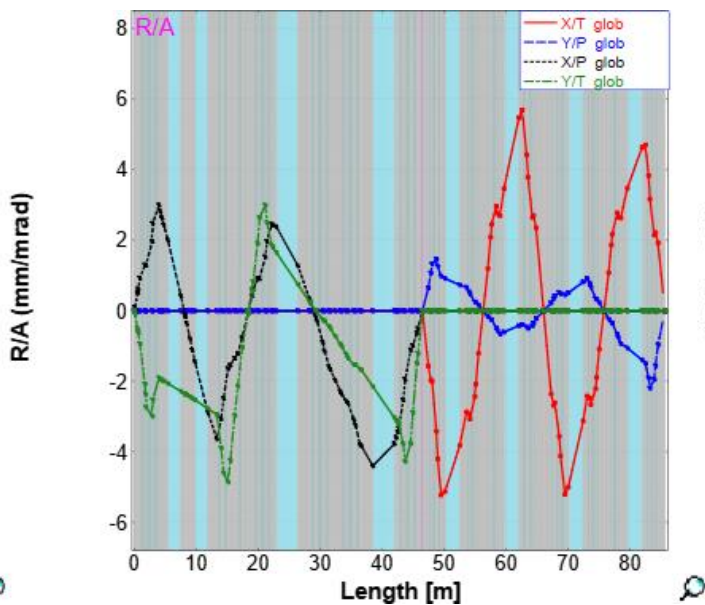
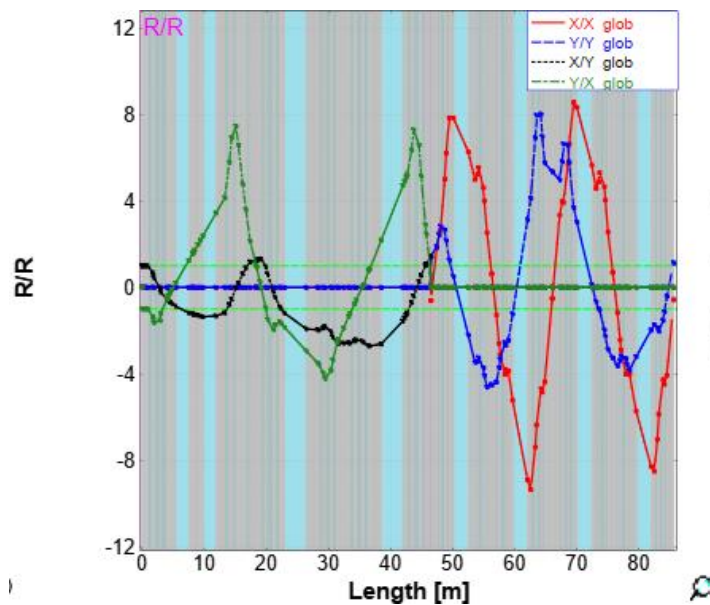
Calculate Optical matrix OK

Edit Optical matrix Cancel

COSY



LISE

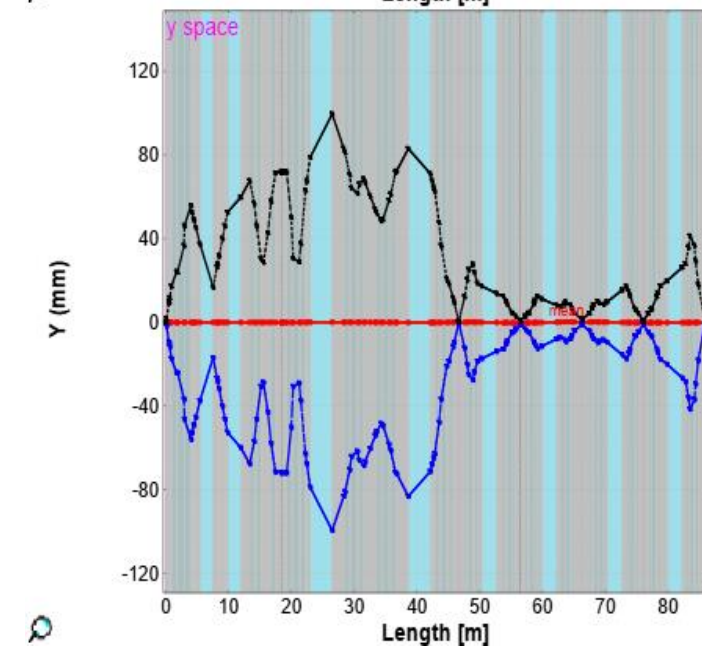
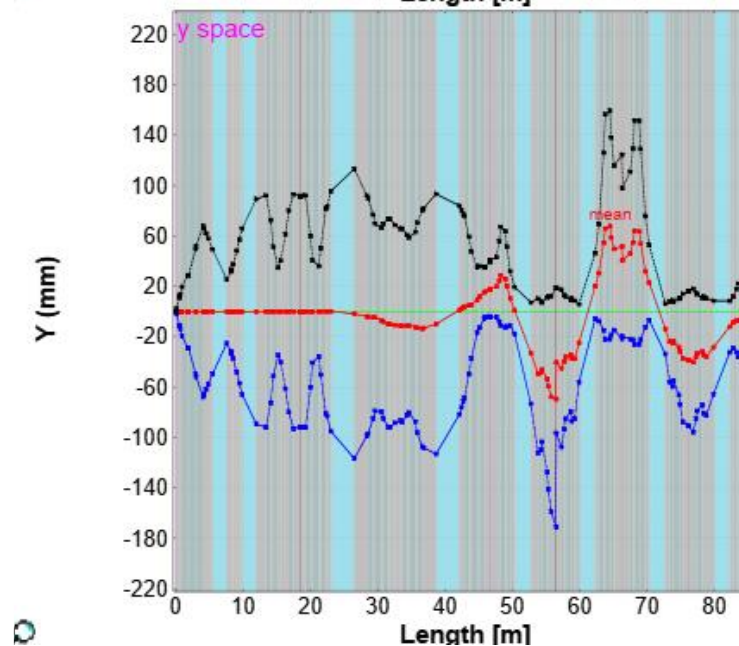
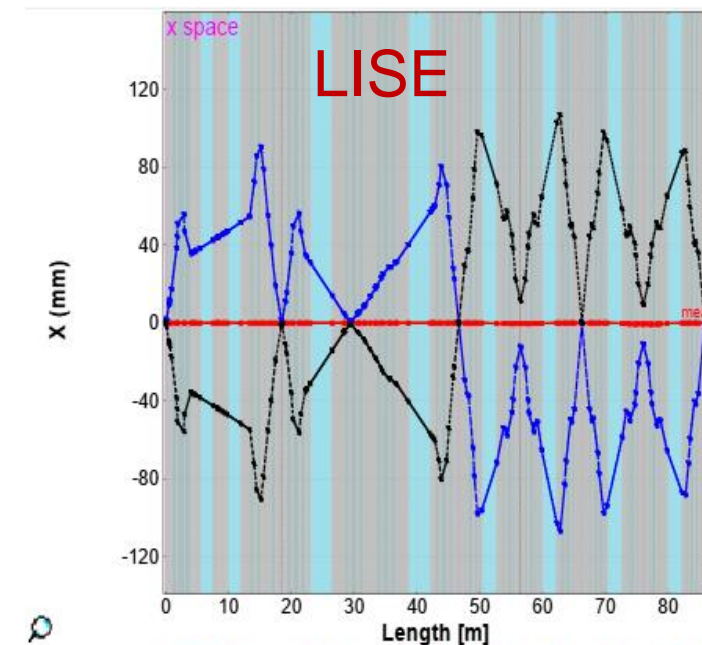
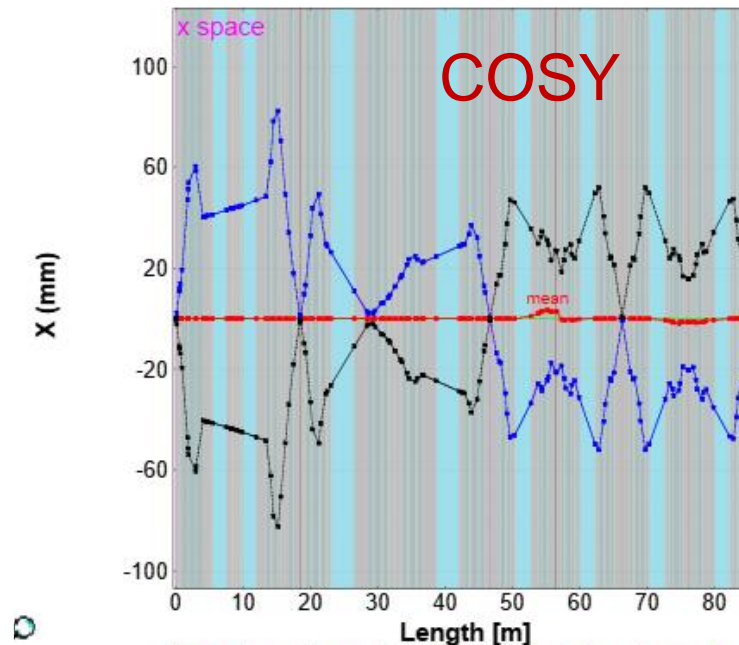




	Distribution	MC
COSY:	44.7%*	70.5%
LISE:	95.0%	87.8%

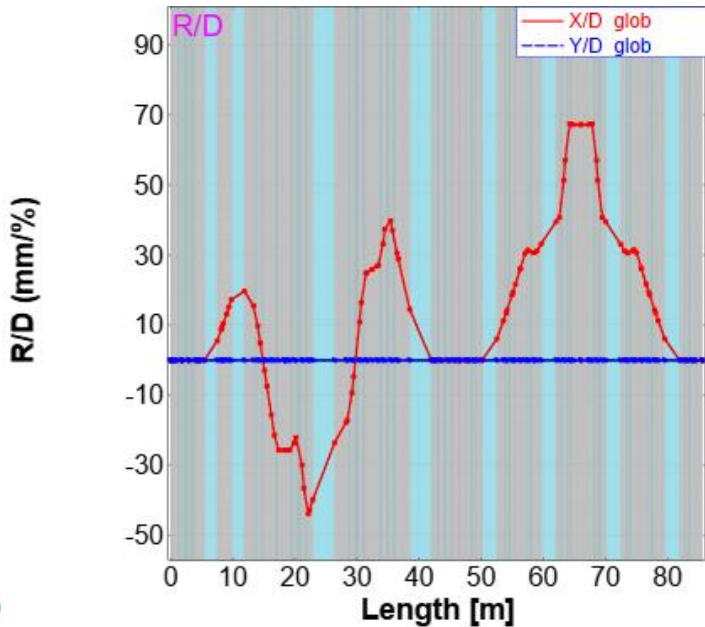
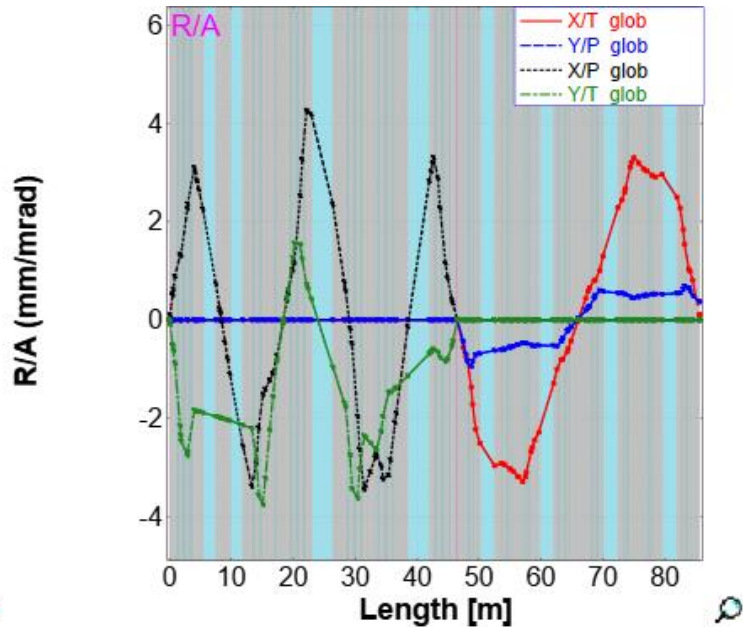
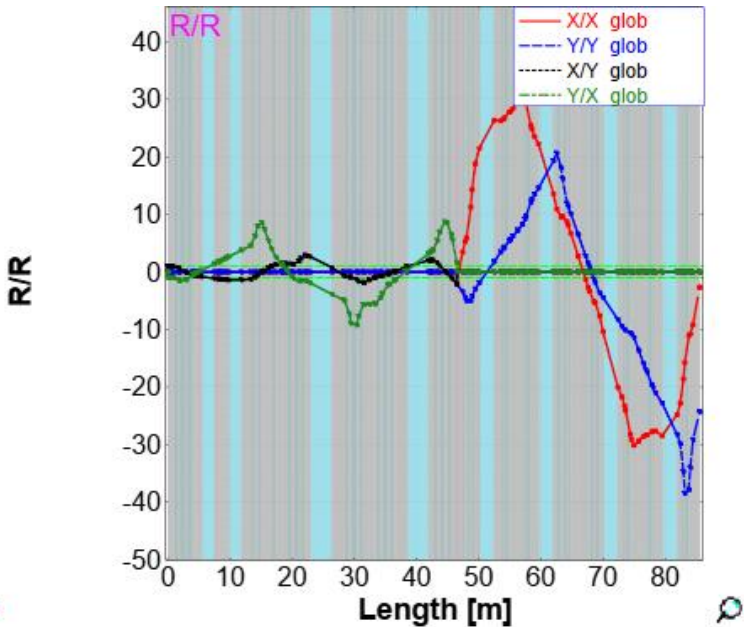
\* - wedge “monochromatic” effect? (vertical)

Emittance [#1]			
		Beam CARD (sigma, semi-axis, half-width...)	1D - shape (Distribution method)
1. X	mm	0.2326	Gaussian
2. T	mrاد	18.6047	Gaussian
3. Y	mm	0.2326	Gaussian
4. P	mrاد	18.6047	Gaussian
5. L	mm	99.0881	Gaussian
6. D	%	3.0395	Gaussian

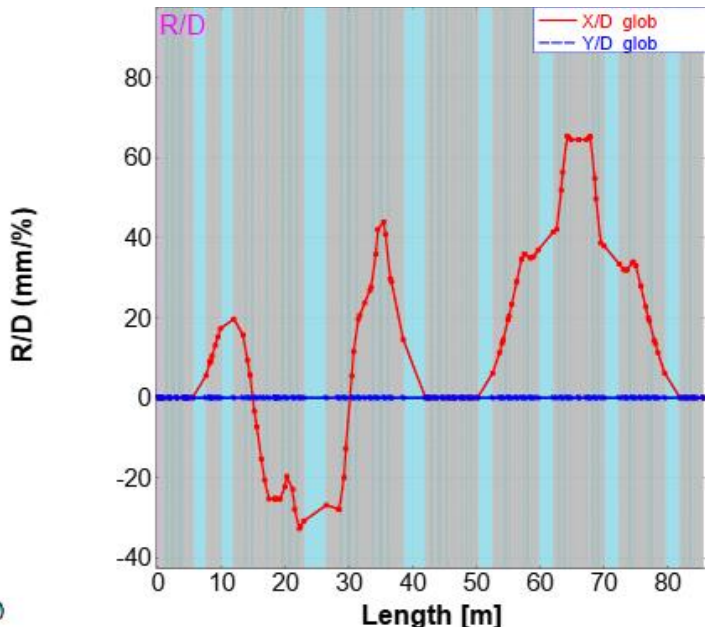
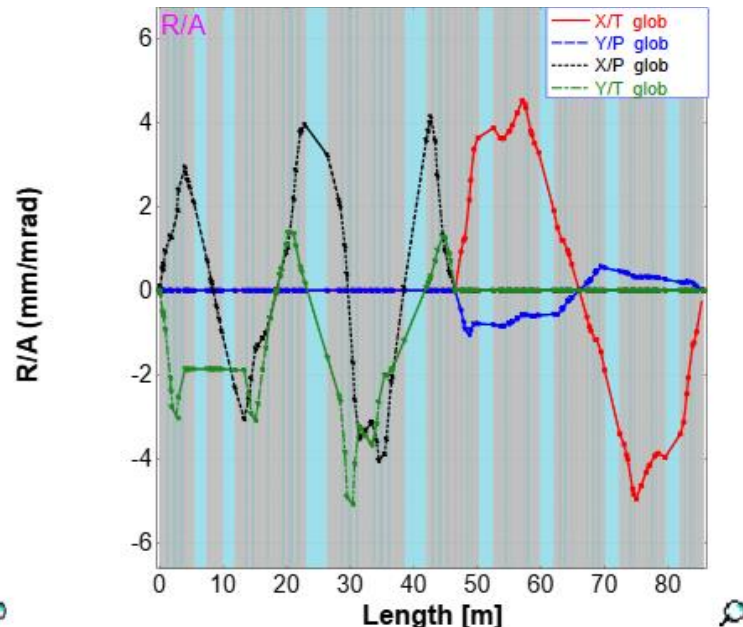
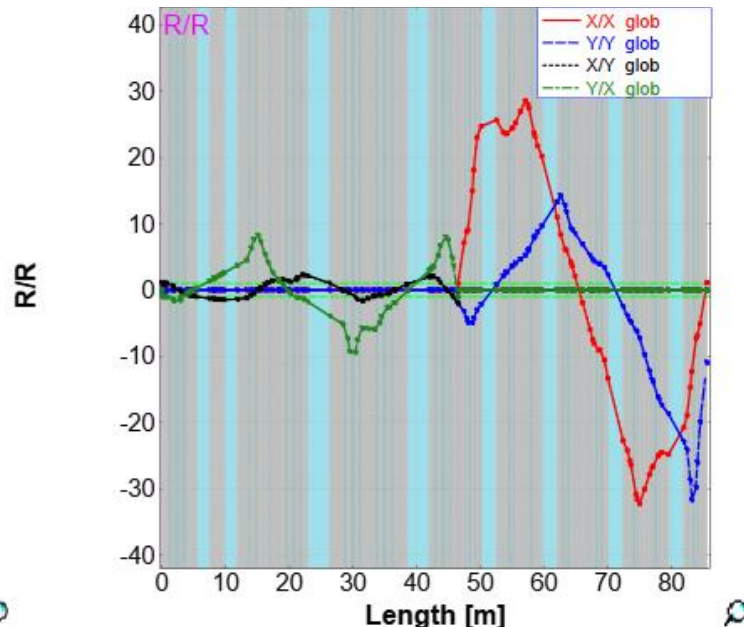


K1\_CB1

COSY



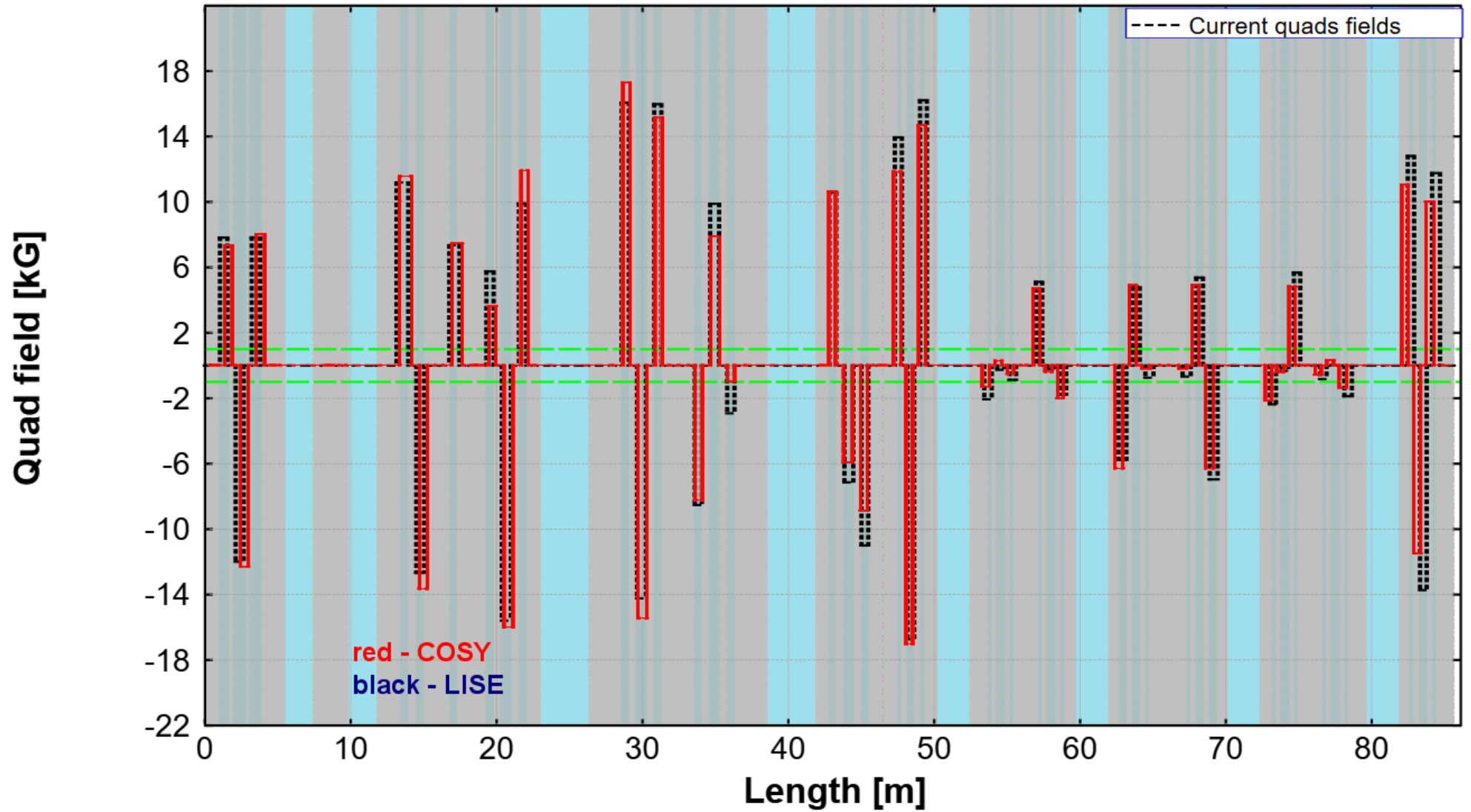
LISE



## Quadrupole field strengths

$^{100}\text{Tc}$  (279.83 MeV/u); Settings on  $^{100}\text{Tc}$ ; Config: D<sub>o</sub> d d d d d q d d d d q d d | d d | d d d | d d d d d q d d d d d | w d d q d d q d d d d d d d d d d d | D d d d d q d d d d d d d d d d d d d d d d | O d q d q d q d | w d ...  
 dp/p=3.10%; Wedge(s): 0, 0, 0, 0; Bp (Tm): 6.0000, 6.0000, 6.0000, 6.0000, 6.0000....

without charge states  
all reactions separ.

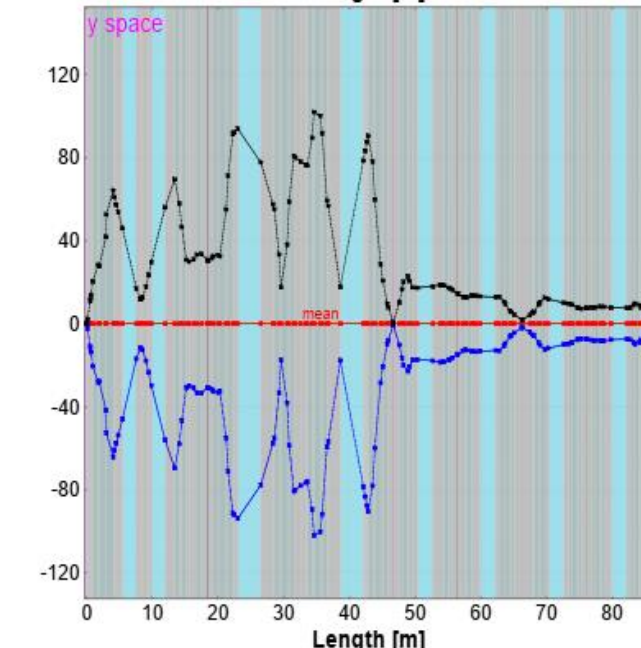
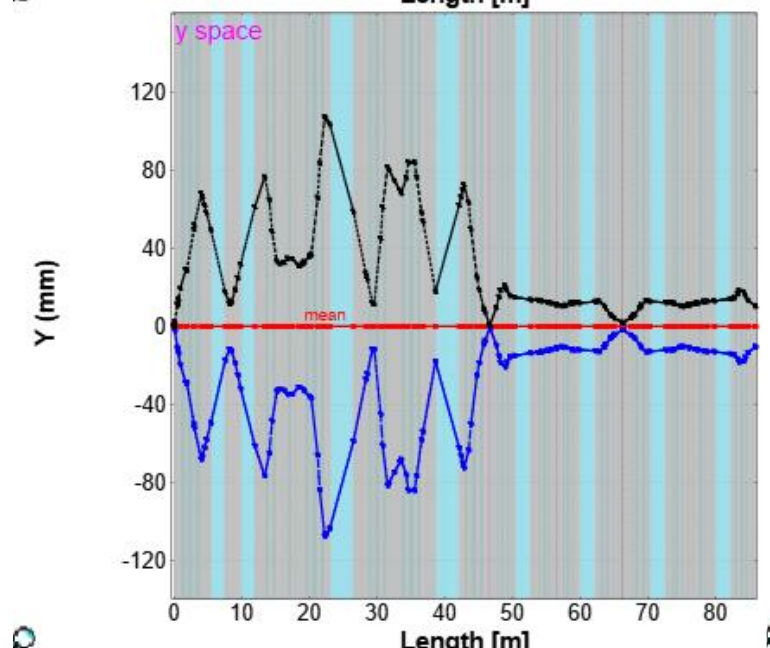
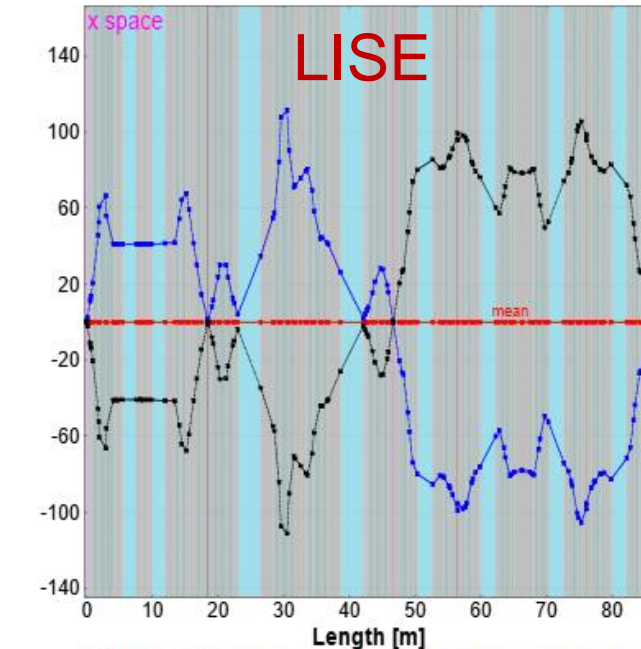
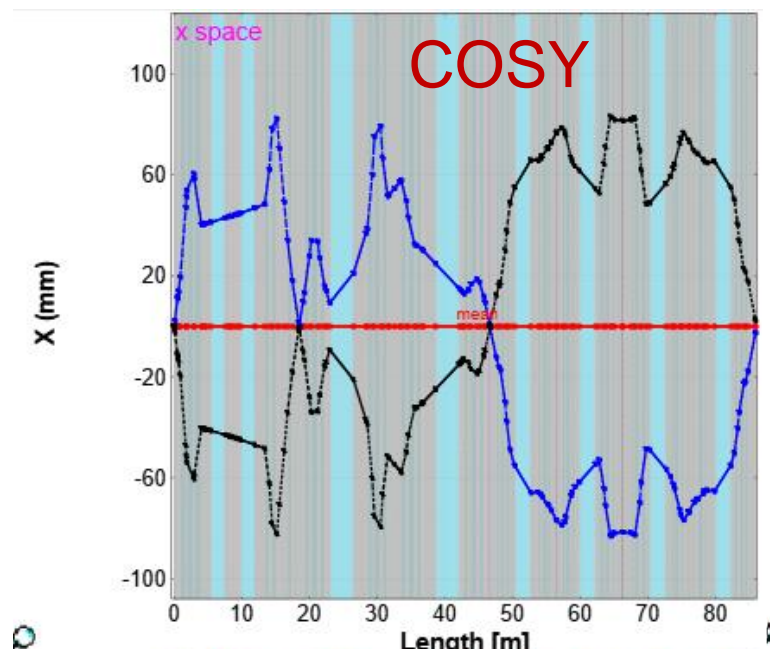




COSY:  
LISE:

Distribution  
67%  
55%

MC  
63%  
48%



Emittance [#1]		
	Beam CARD (sigma, semi-axis, half-width...)	1D - shape (Distribution method)
1. X	mm 0.2326	Gaussian
2. T	mrاد 18.6047	Gaussian
3. Y	mm 0.2326	Gaussian
4. P	mrاد 18.6047	Gaussian
5. L	mm 99.0881	Gaussian
6. D	% 1.03	Gaussian