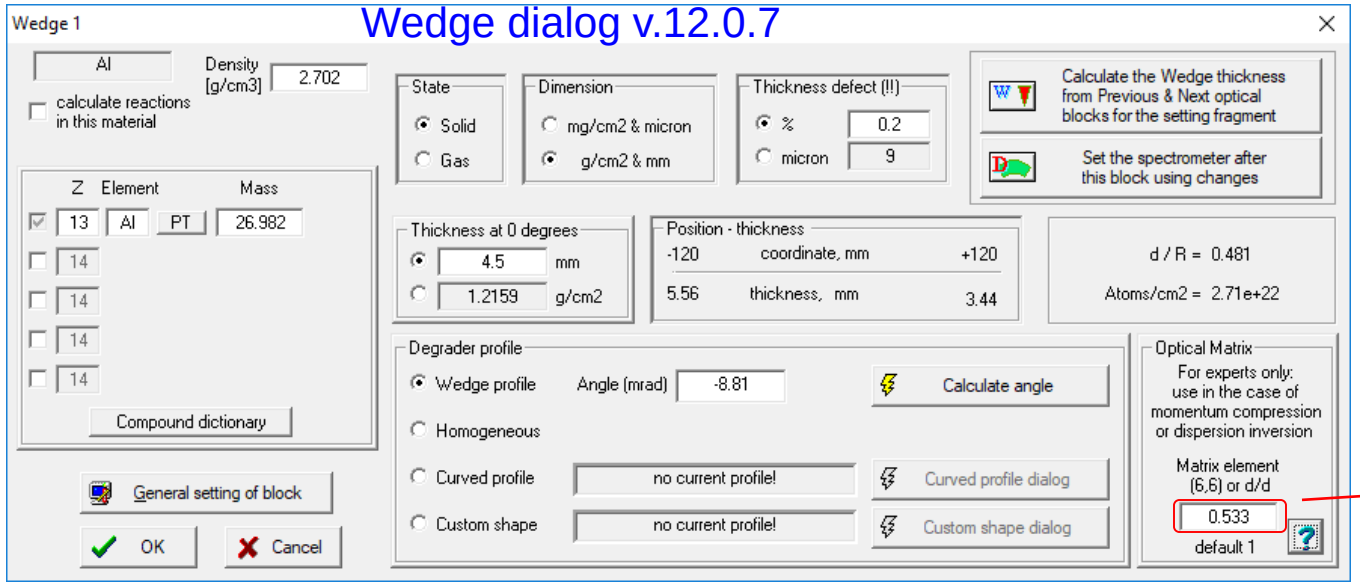
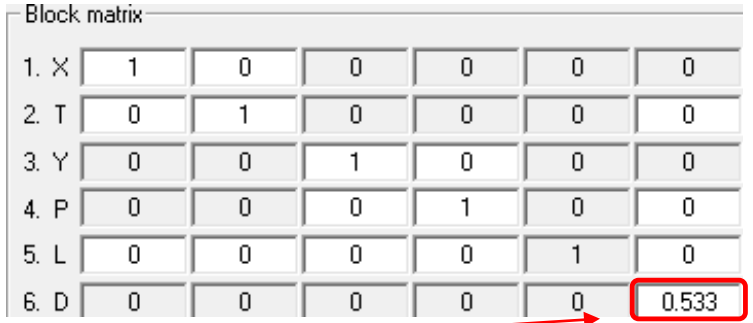
Using LISE^{++} for special wedge optics: version 12.0.7

- LISE^{++} uses optical matrices ONLY for optical blocks. Phase space changes by wedge blocks are calculated during transmission calculation in case of both (Distribution and MC) modes. The user should not be care for providing special matrices for the transmission calculation.
- In order to plot the Matrix envelope (or run Optics minimization procedure) properly in the case of special wedge optics as momentum compression or dispersion inversion, the Wedge block has been modified to implement special virtual optical matrices.
- Momentum compression: set local element (6,6) or (d/d) equal to 1/Mf, where Mf is the momentum compression factor.
- Dispersion inversion: set local element (6,6) or (d/d) equal to -1

v.12.0.7
12/12/19

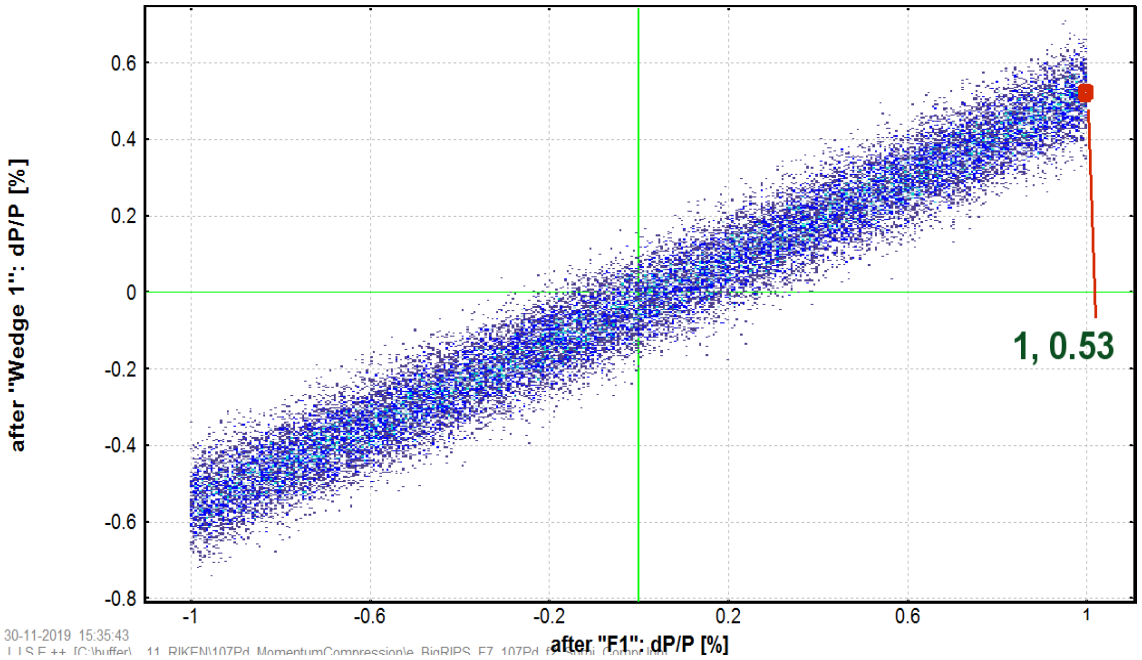


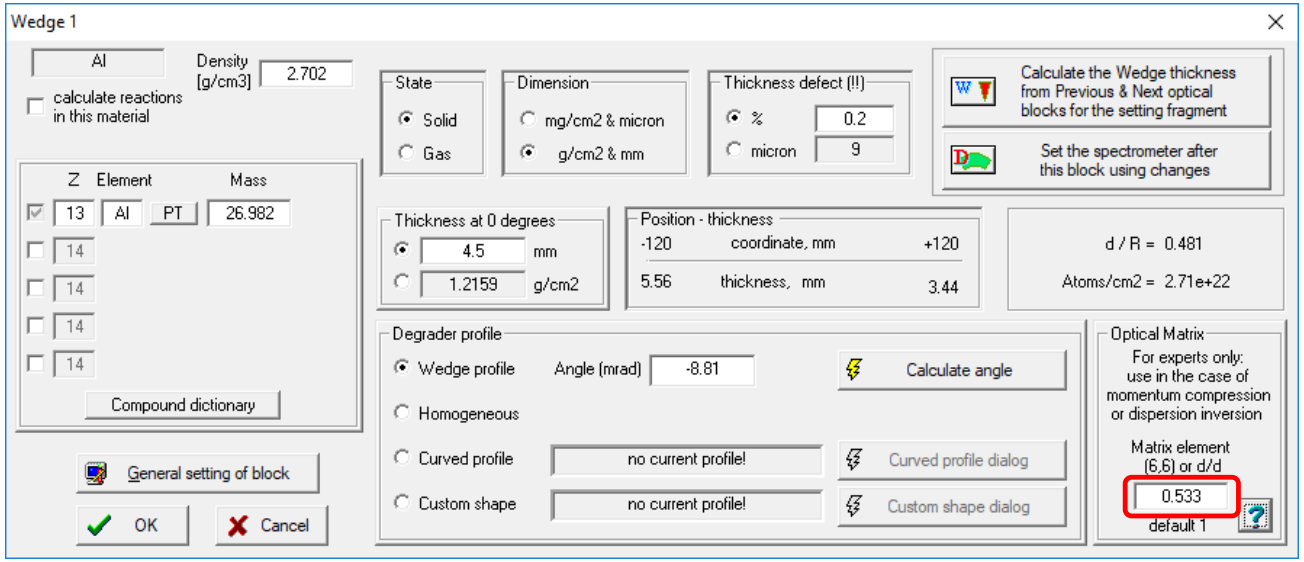


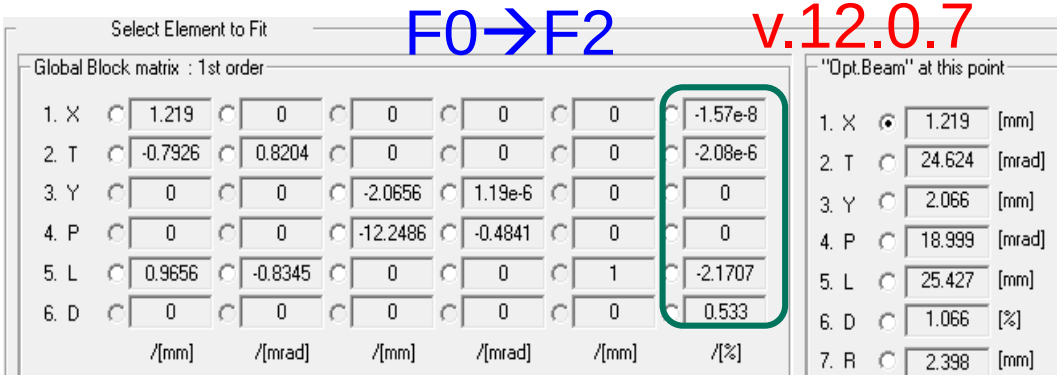
Momentum compression

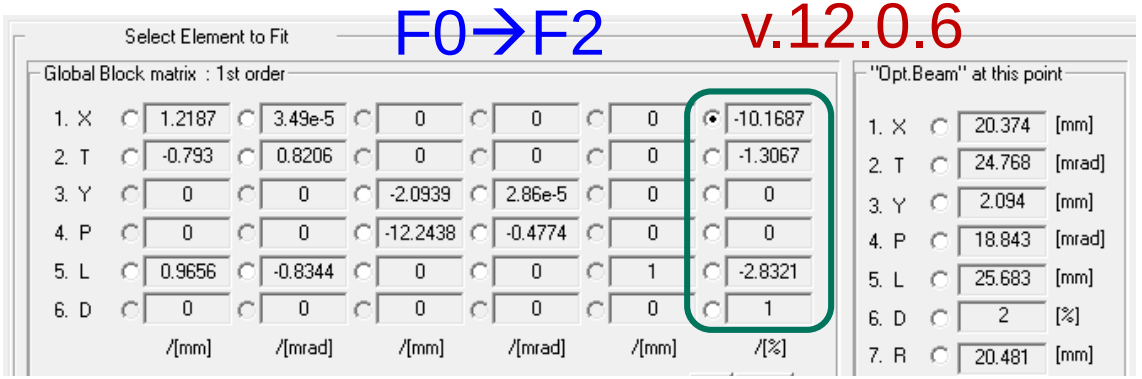
Compression momentum: #1 wedge matrix

- Momentum compression factor for given Wedge thickness (4.5 mm), wedge angle (-8.89 mrad) with F0-F1 optics was extracted from LISE^{++} simulations









Compression momentum: #1 wedge matrix

F0→F2

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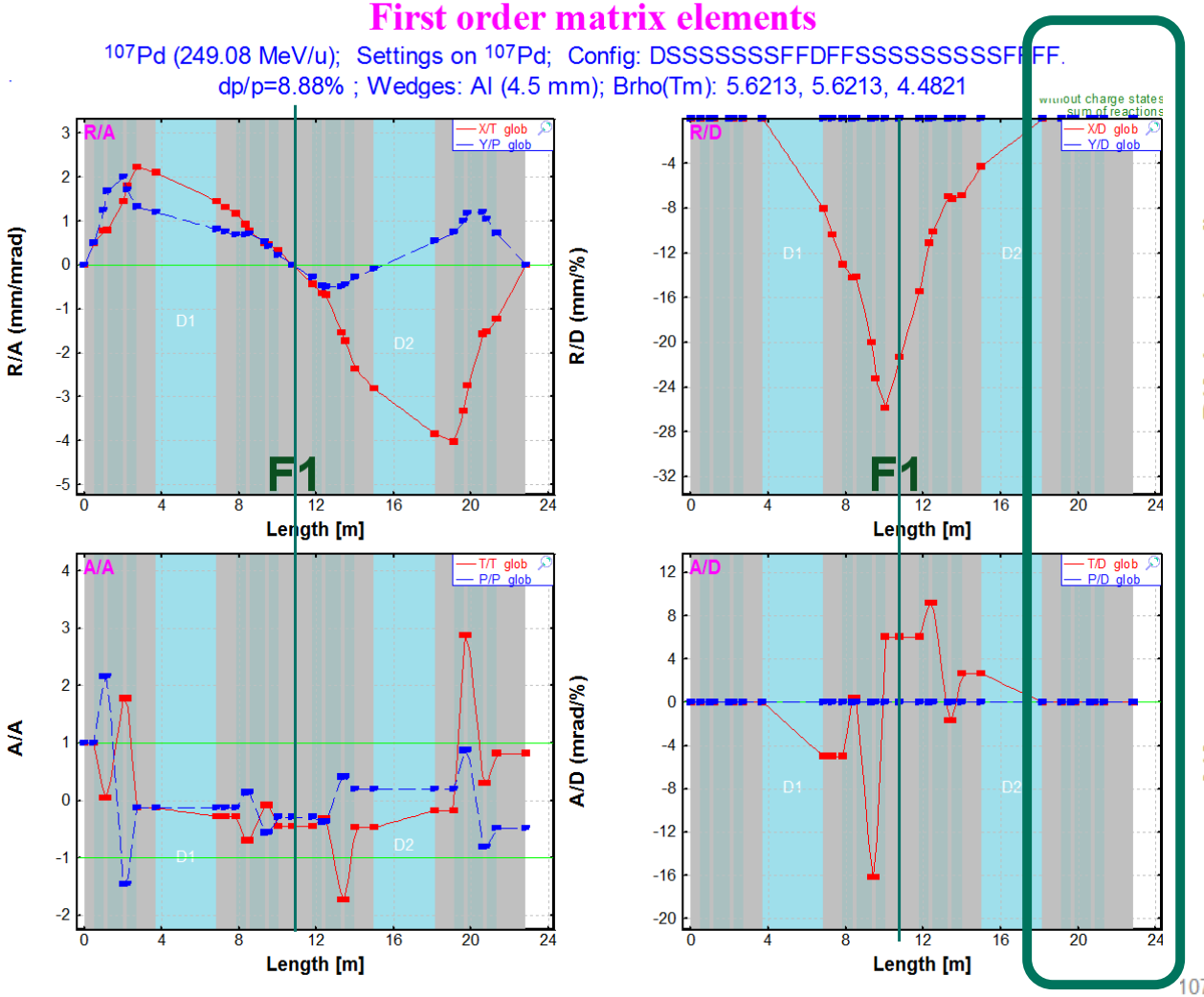

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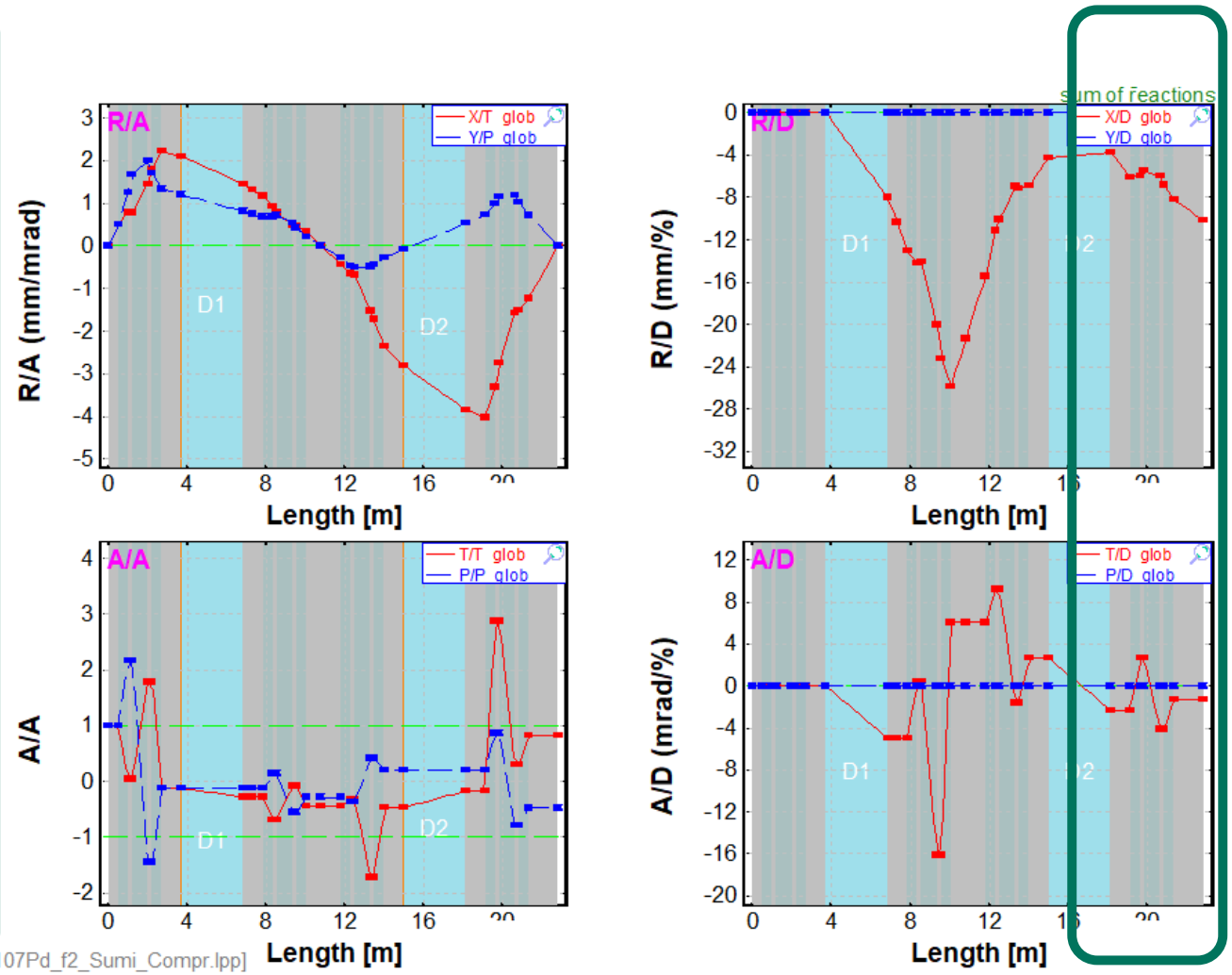
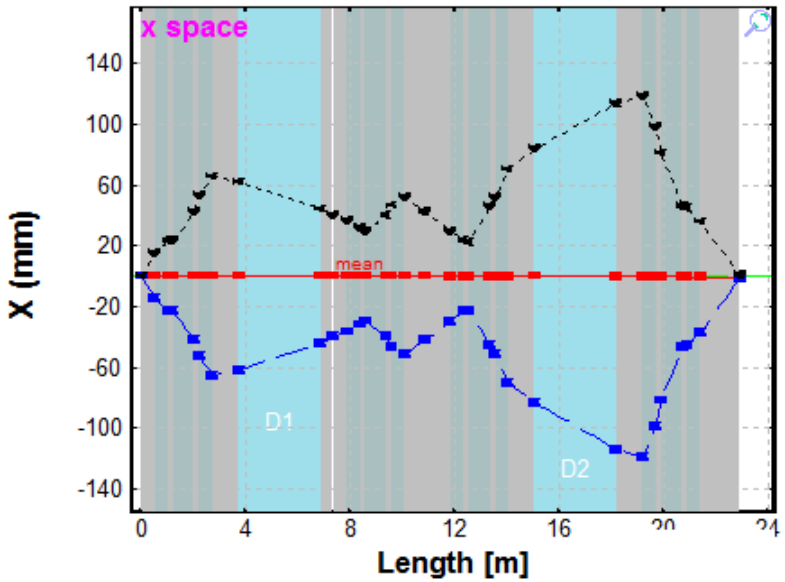
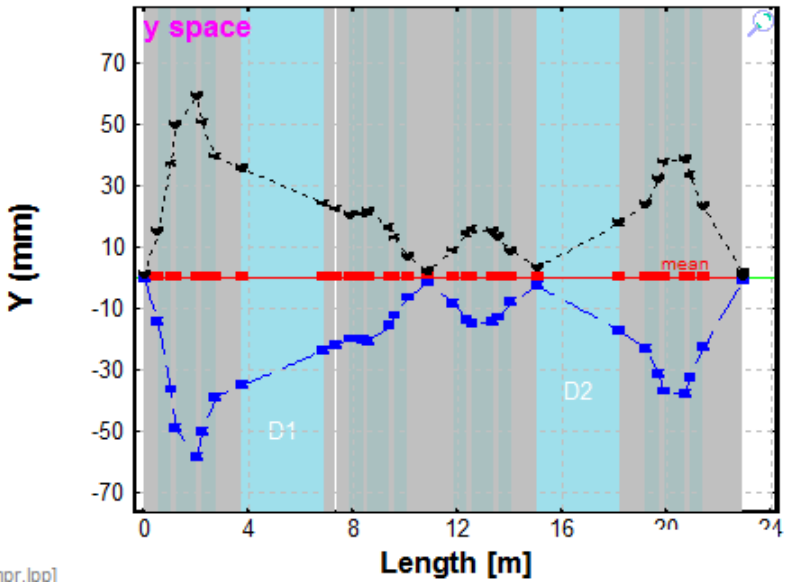


Transmission calculations with the optimized optics and a wedge

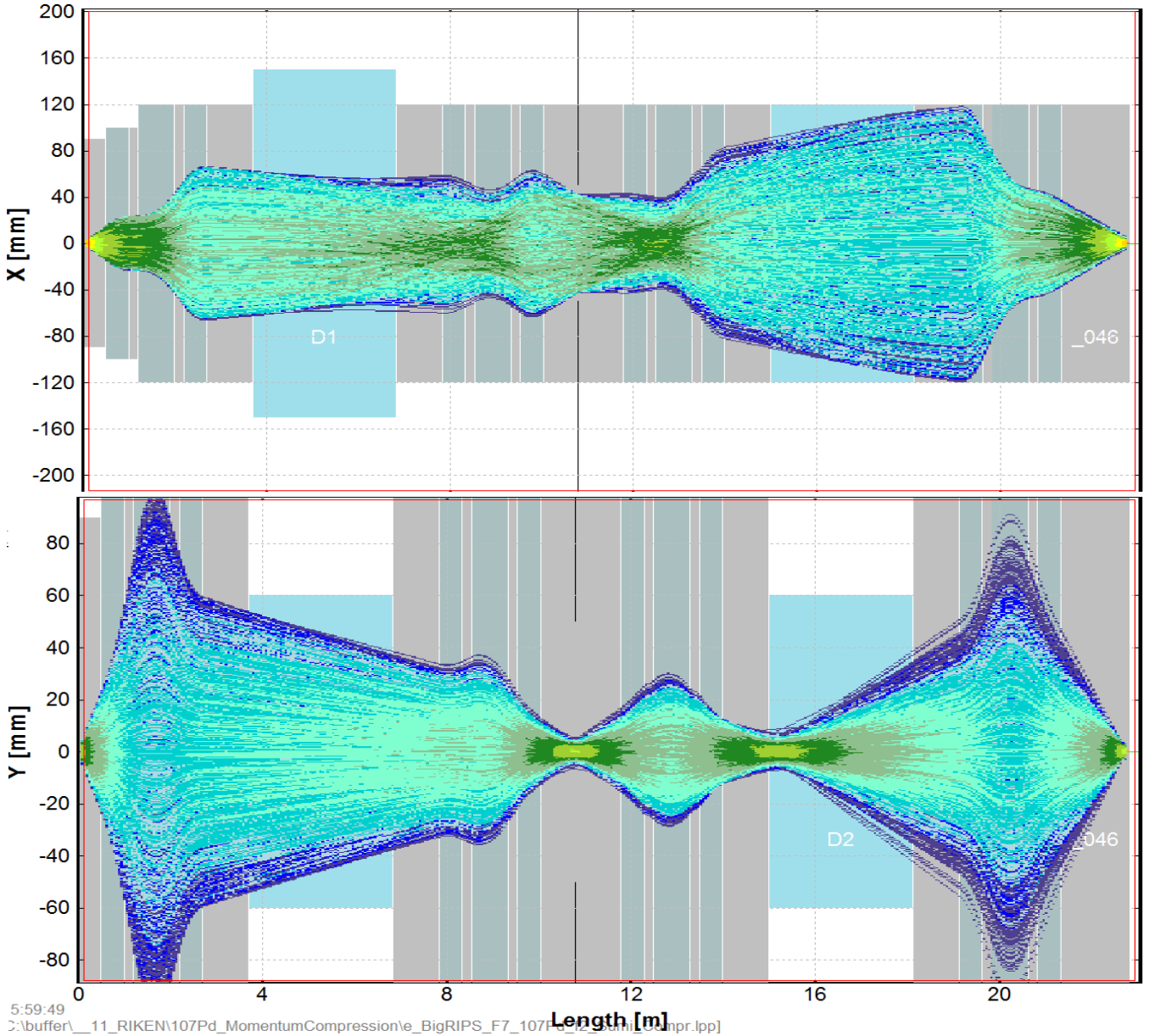
“Distribution” : Sigma envelope





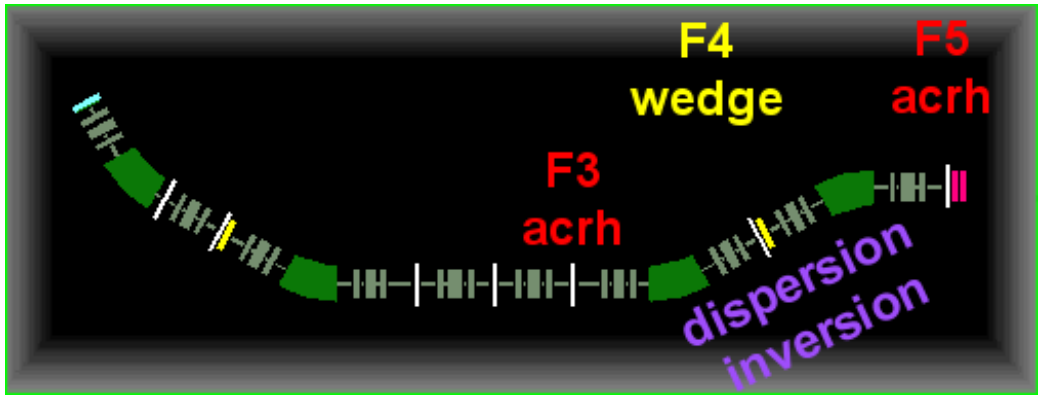
Before transmission calculations do not forget to disable the virtual wedge matrix

Monte Carlo



Momentum dispersion inversion

Momentum dispersion inversion



F4_wedge

Al | Density [g/cm3] 2.702 | calculate reactions in this material

State: Solid / Gas | Dimension: mg/cm2 & micron / g/cm2 & mm | Thickness defect (!!): % 0.1 / micron 15

Calculate the Wedge thickness from Previous & Next optical blocks for the setting fragment

Set the spectrometer after this block using changes

Z	Element	Mass
13	Al	26.982
14		
14		
14		
14		

Compound dictionary

Thickness at 0 degrees: 15 mm / 4.053 g/cm2

Position - thickness: -120 coordinate, mm +120 | 29.19 thickness, mm 0.81

d / R = 0.289

Atoms/cm2 = 9.05e+22

Degrader profile: Wedge profile, Angle (mrad) -117.715, Calculate angle | Homogeneous | Curved profile, no current profile!, Curved profile dialog | Custom shape, no current profile!, Custom shape dialog

Optical Matrix: For experts only: use in the case of momentum compression or dispersion inversion. Matrix element (6,6) or d/d: -1, default 1

General setting of block | OK | Cancel

Block matrix

	/[mm]	/[mrad]	/[mm]	/[mrad]	/[mm]	
1. X	1	0	0	0	0	0
2. T	0	1	0	0	0	0
3. Y	0	0	1	0	0	0
4. P	0	0	0	1	0	0
5. L	0	0	0	0	1	0
6. D	0	0	0	0	0	-1

Momentum dispersion inversion

v.12.0.6

v.12.0.7