Optics Minimization in LISE^{++} : update

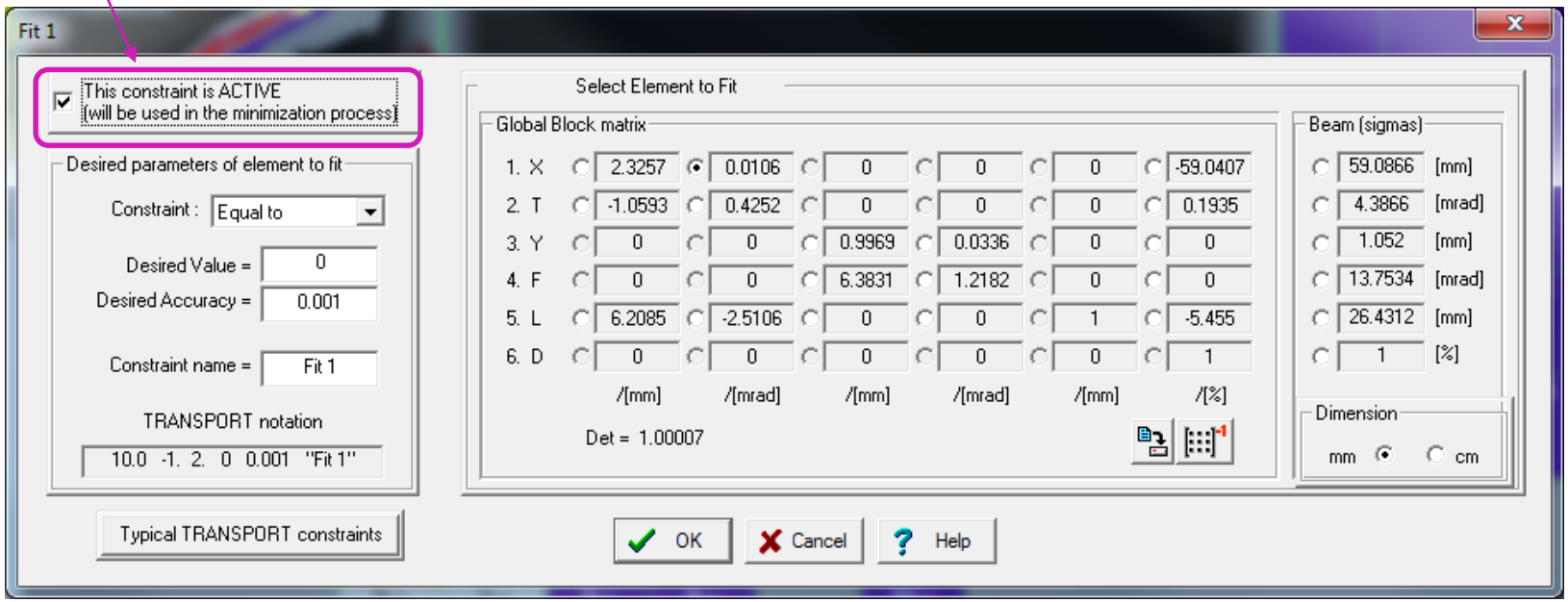
Update
v.9.10.119
from 06/23/15

Please find the first part of
Optics minimization v.9.10.100 :
http://lise.nscl.msu.edu/9_10/9_10_minimization.pdf

1. **Fitting constraint block : new option “Active”**
2. **Change the Fitting option "Active" in the “Fast Edit Optics” dialog**
3. **New Option in the Preferences dialog: show "Fit" blocks in the Scheme and Setup windows**
4. **Appearance of Fitting constraint blocks in Menus, Dialog, Windows**
5. **Call the "Fast Edit Optics" dialog from the Optics optimization dialog**
6. **User Break in the Minimization process**
7. **Miscellaneous for fitting procedure**
8. **Miscellaneous for v.9.10.119**

Fitting constraint block : New Option “Active”

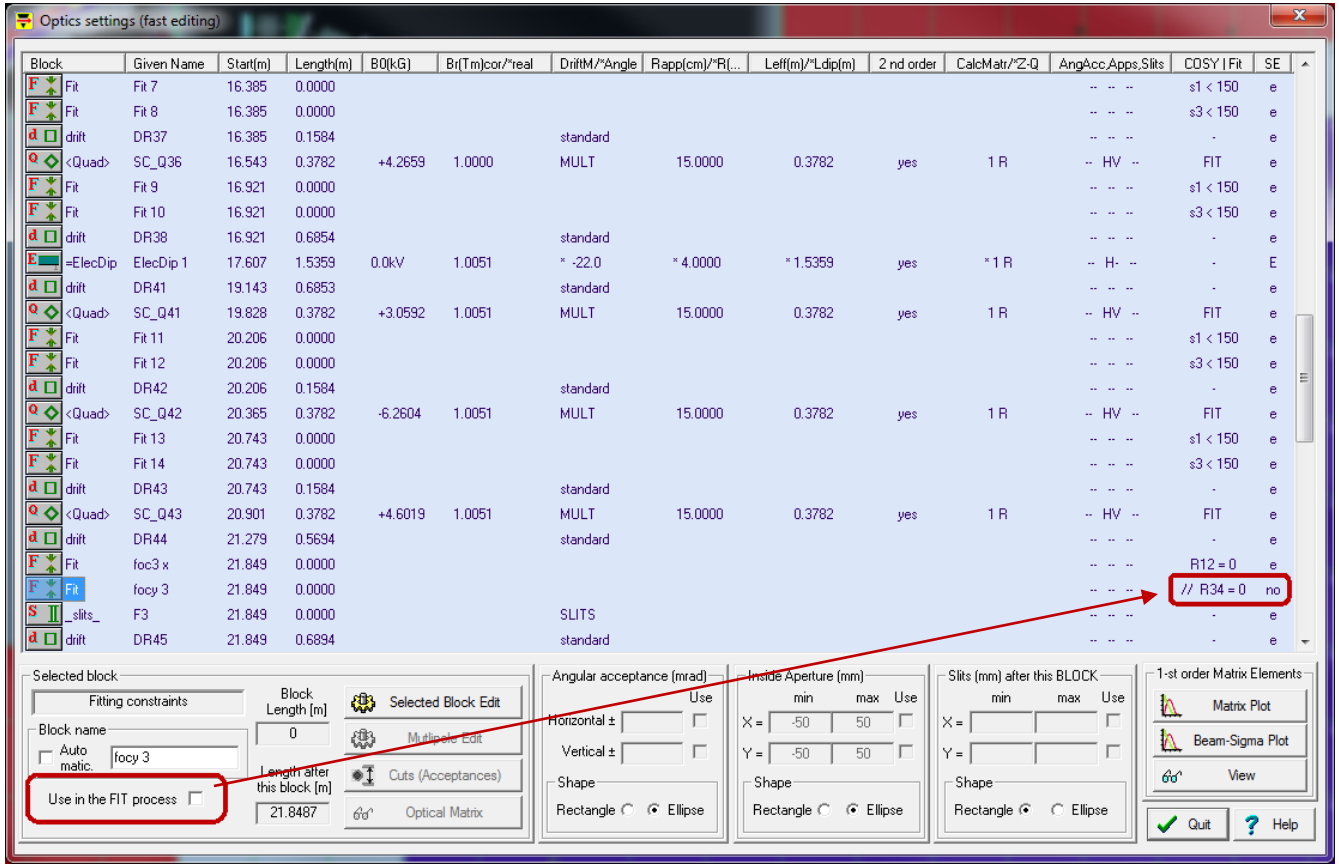
New option

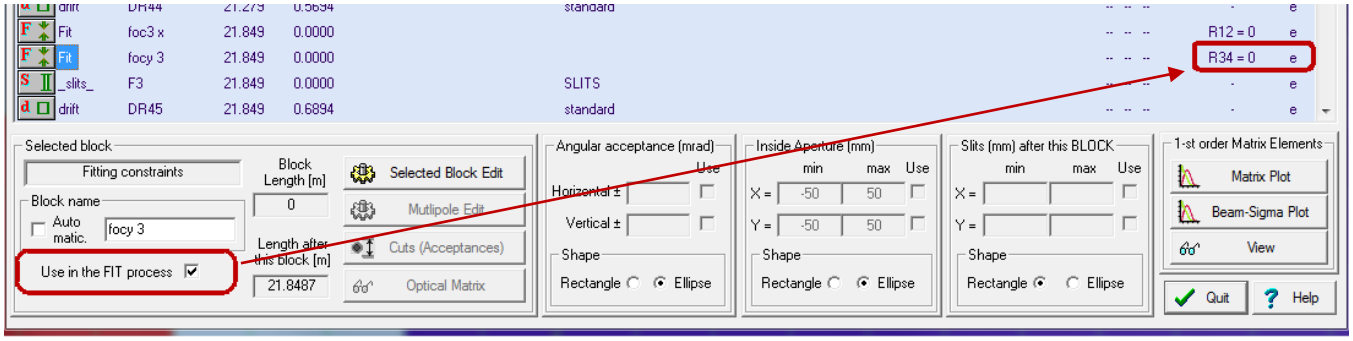


- If it is not “active”, then the block will still enable in the Setup and FastEditOptics dialogs, but it won’t be shown in The Scheme and Setup windows
- This property it can be easily changed from the “Fast Edit Optics” dialog (see the next slide)

Change the Fitting option "Active" in the “Fast Edit Optics” dialog

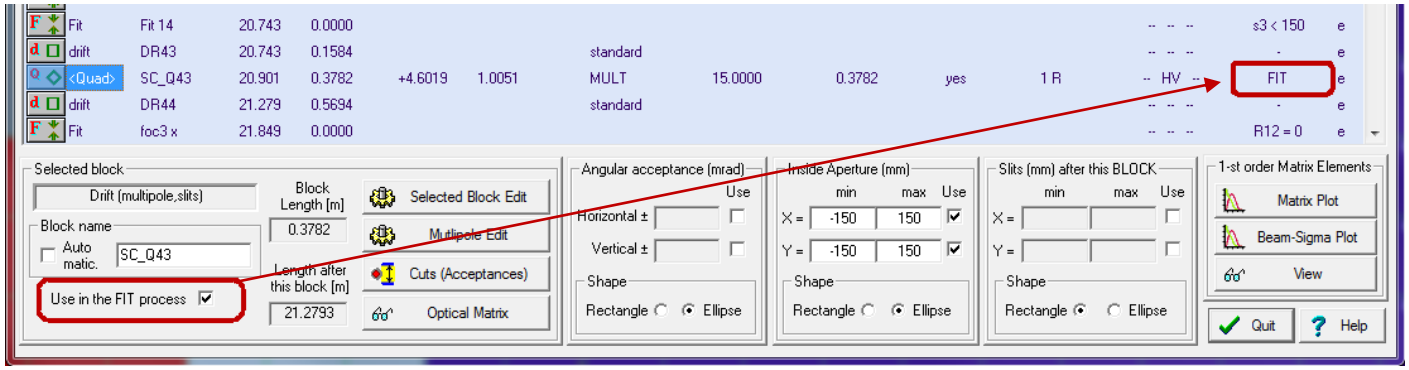
Application for [Fitting constraint](#) blocks

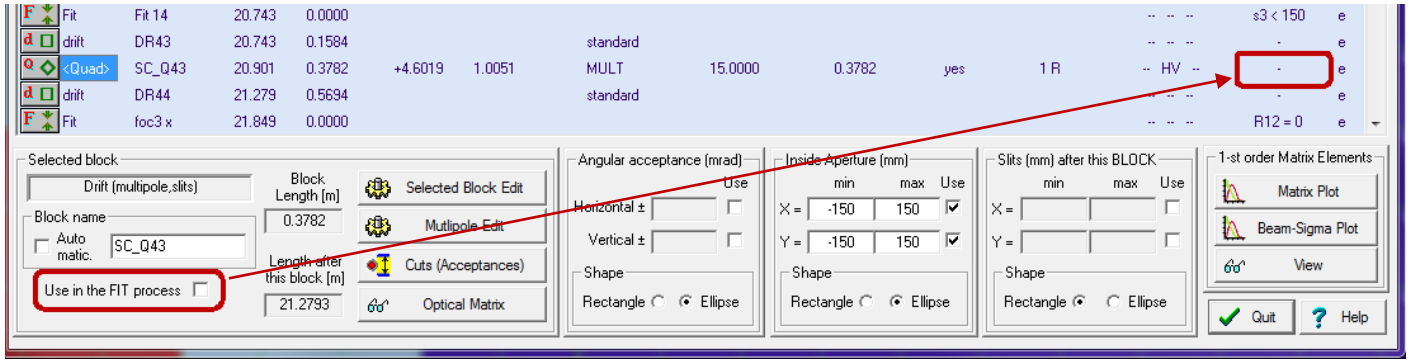




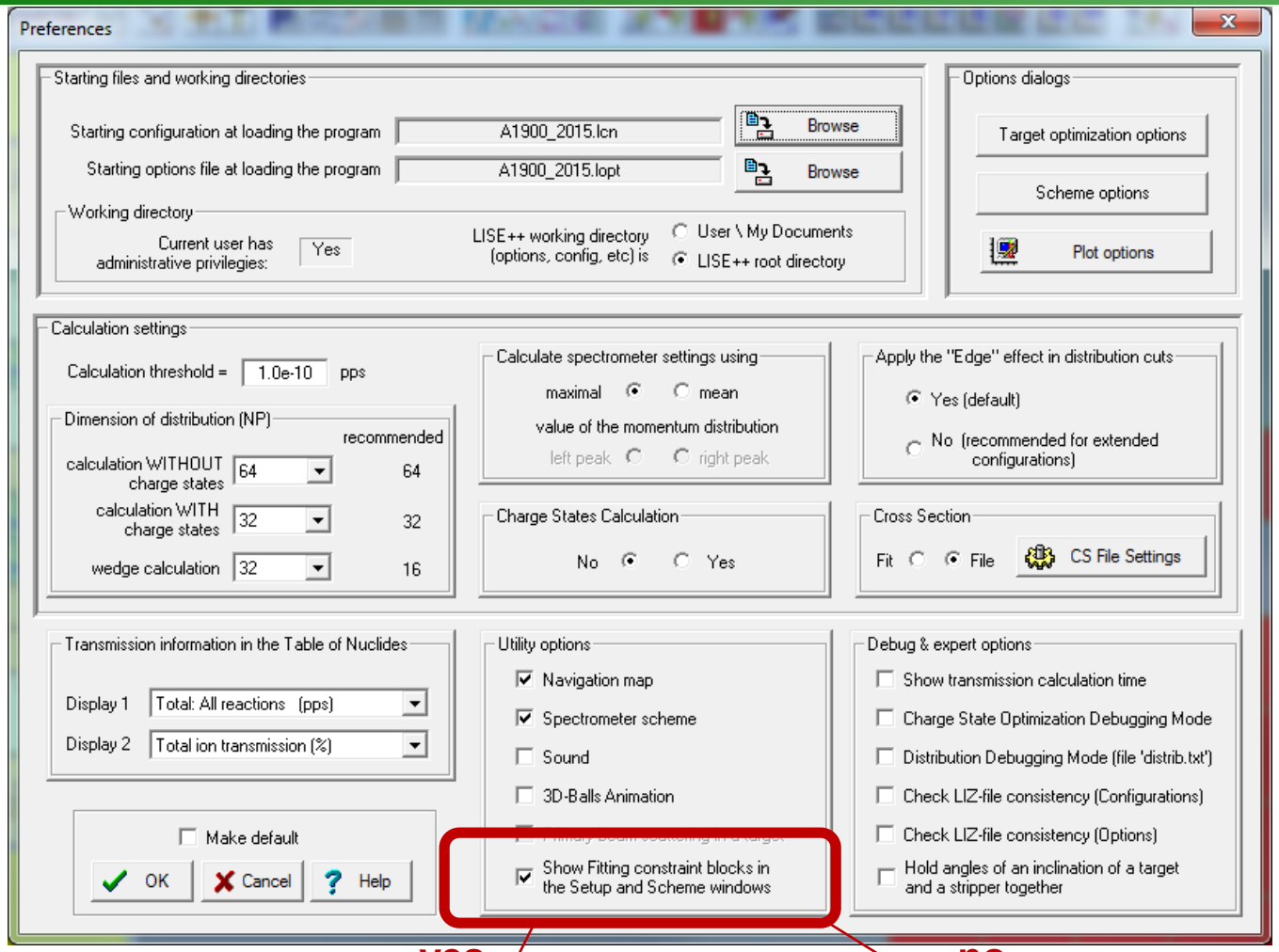
Change the option “Use in the Fit process" in the “Fast Edit Optics” dialog

Application for
M & E quadrupoles blocks

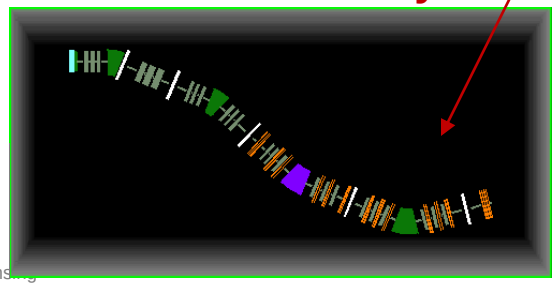




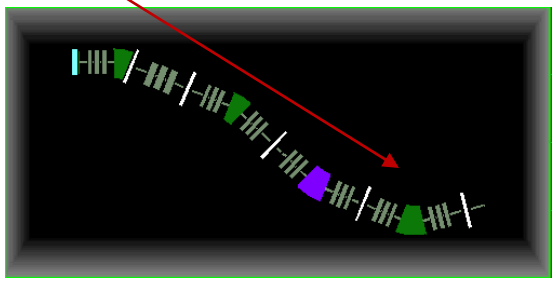
New Option in the Preferences dialog: show "Fit" blocks in the Scheme and Setup windows



yes



no

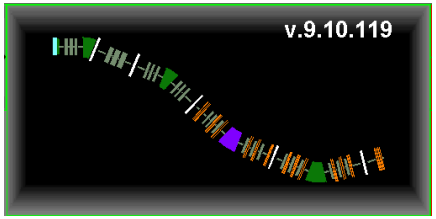


Appearance of Fitting constraint blocks in Menus, Dialog, Windows

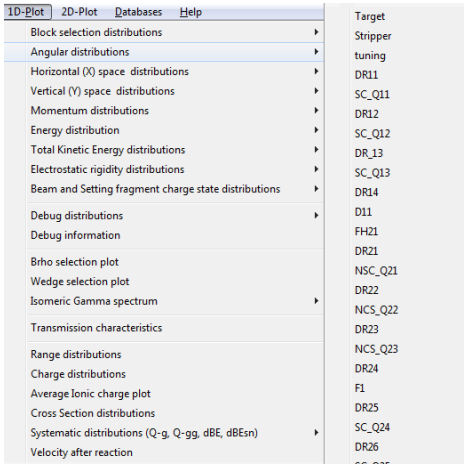
Window	Show
Setup window	only Active*
Setup scheme	only Active*
Setup dialog ("Spectrometer design")	always
Optics settings dialog (fast editing)	always
Menus	never
Monte Carlo calculation of fragment transmission	never

** - show only "Active", if the corresponding option is set the "Preferences"diaolg*

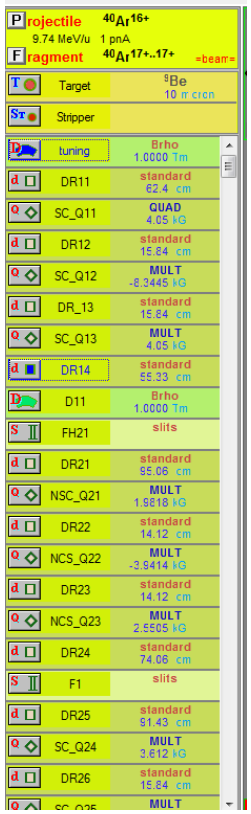
Setup scheme



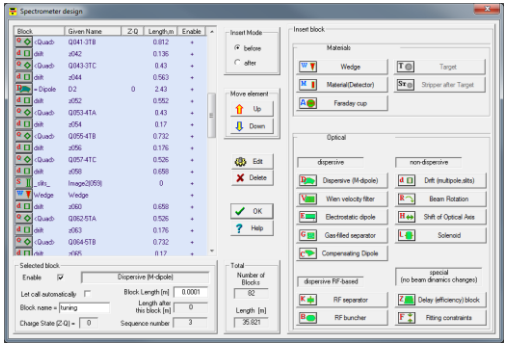
Menus



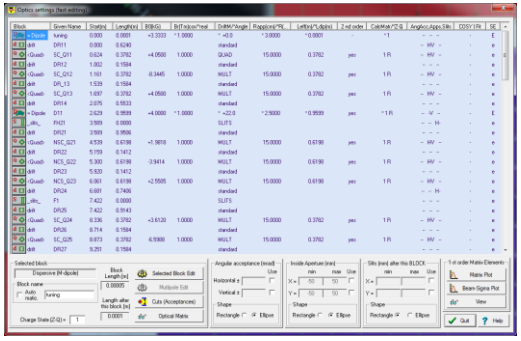
Setup window



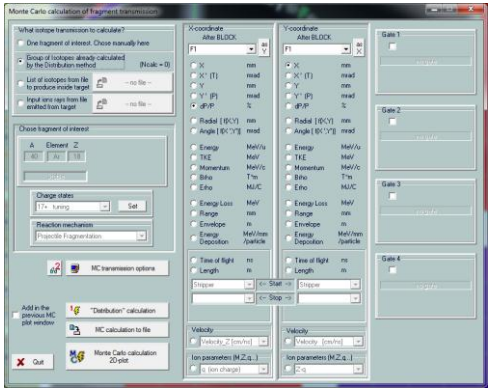
Setup dialog ("Spectrometer design")



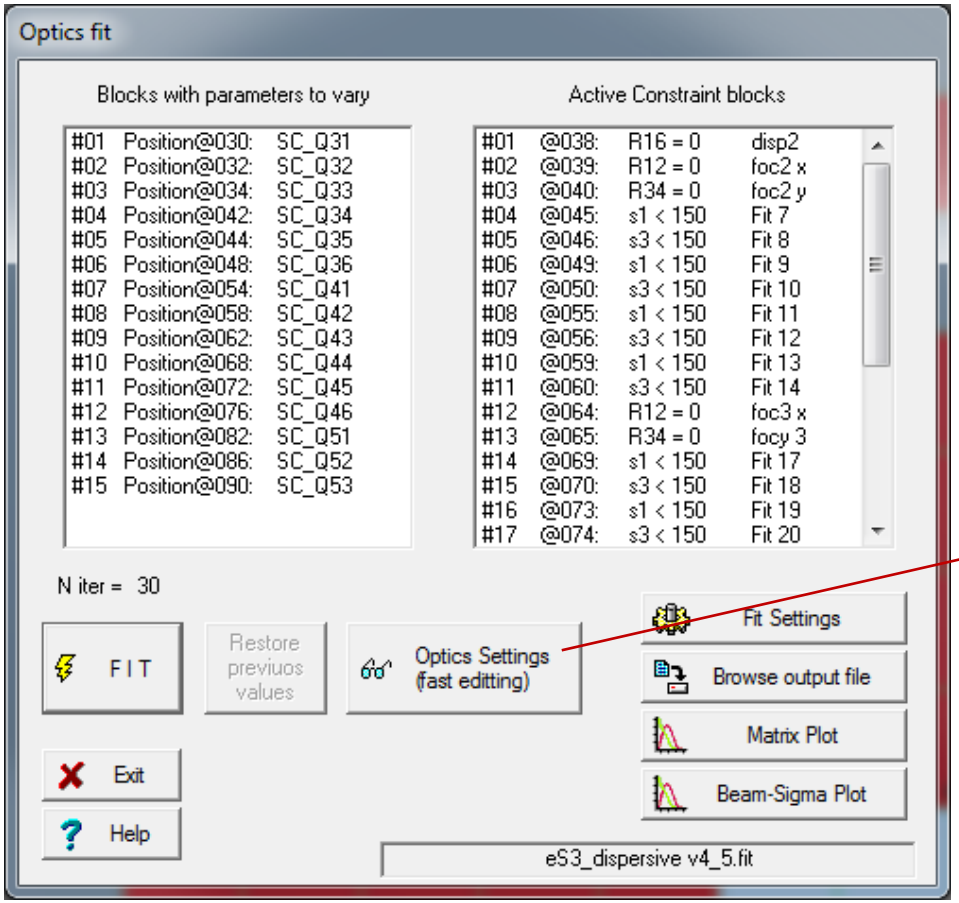
Optics settings (fast editing)

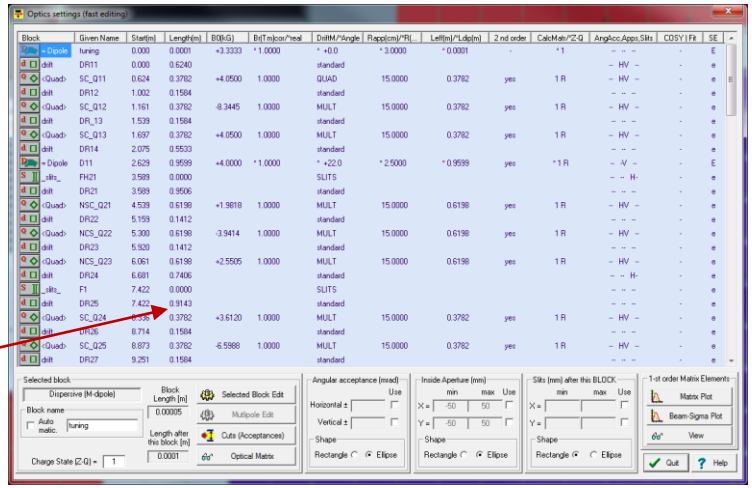


Monte Carlo calculation of fragment transmission



Call the "Fast Edit Optics" dialog from the Optics optimization dialog

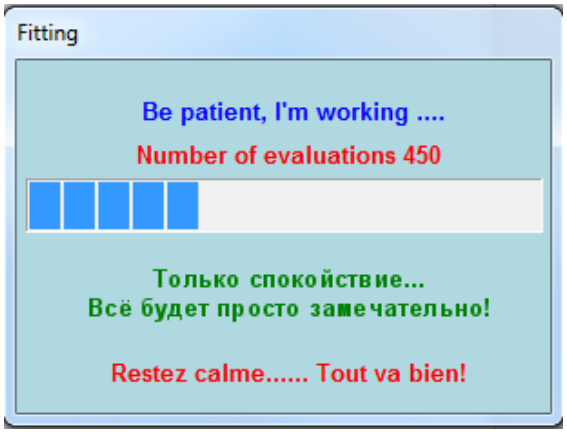




Without leaving the "Optics fit" dialog it is possible to load the Fast Optics Edit" dialog where you can set/unset "Active" properties, modify Fitting constraint block parameters, or enter a Quad field value.

User Break in the Minimization process

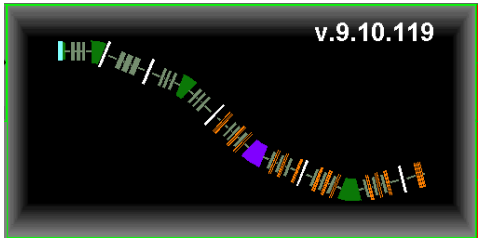
Press the “Escape” button to cancel the minimization procedure



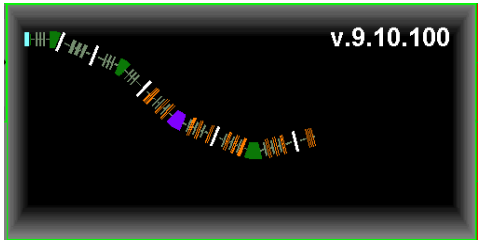

```
#26: foc4 x          +1.036e-02   +2.328e-03    1.000e-03   2.328e+00   | = +0.00e+00
#27: foc4 y          +7.946e-02   -3.101e-02    1.000e-01   3.101e-01   | = +0.00e+00
#28: disp4           +1.077e+01   +1.048e-02    1.000e-02   1.048e+00   | = +0.00e+00
#29: beamy4          +3.799e+00   +1.446e+01    1.000e-01   3.913e-03   | < +2.00e+01

------------------------------------------------------------------------------

==>  Results for eS3_dispersive v4_5.fit:
Termination reason: USER BREAK after 600 evaluations!

Minimization info:
0: 1.160e+06         ||e||_2 at initial p
1: 1.153e+02         ||e||_2
2: 3.298e+03         ||J^T e||_inf
3: 7.967e-29         ||Dp||_2
4: 1.377e-05         mu/max[J^T J]_ii
5: 300               # iterations
```

Miscellaneous for fitting procedure

- New functions BLOCKnext and BLOCKprevious with "noFit" options



- Corrections for Separator scheme in the case of Fitting block



- "SetFocus" back in the Fast Edit Optics dialog

- Minimization output modification

f12:	SC_Q46	+0.0e+00	<	+3.296e+00	<	+1.0e+01	+2.890e+00
f13:	SC_Q51	+0.0e+00	<	+2.517e+00	<	+1.0e+01	+2.798e+00
f14:	SC_Q52	-1.0e+01	<	-5.905e+00	<	+0.0e+00	-5.845e+00
f15:	SC_Q53	+0.0e+00	<	+3.202e+00	<	+1.0e+01	+3.456e+00

Fitting values:		Initial	Final	Precision	(Fin-Des)/P		Desired
f01:	disp2	+1.158e-01	+8.581e-02	1.0e-02	+8.581e+00	=	0
f02:	foc2 x	+3.150e-04	-3.143e-04	1.0e-03	+3.143e-01	=	0
f03:	foc2 y	+5.912e-01	+6.146e-01	1.0e-01	+6.146e+00	=	0
f04:	Fit 7	+2.487e+01	+3.303e+01	1.0e-01	0	<	150
f05:	Fit 8	+2.314e+01	+3.266e+01	1.0e-01	0	<	150
f06:	Fit 9	+3.827e+01	+5.153e+01	1.0e-01	0	<	150
f07:	Fit 10	+1.665e+01	+2.289e+01	1.0e-01	0	<	150
f08:	Fit 11	+1.014e+02	+8.777e+01	1.0e-01	0	<	150
f09:	Fit 12	+2.119e+01	+2.143e+01	1.0e-01	0	<	150
f10:	Fit 13	+1.433e+02	+1.278e+02	1.0e-01	0	<	150
f11:	Fit 14	+2.145e+01	+2.170e+01	1.0e-01	0	<	150
f12:	foc3 x	-5.376e-03	-2.484e-03	1.0e-02	+2.484e-01	=	0
f13:	focy 3	-5.088e-02	-4.954e-02	1.0e-01	+4.954e-01	=	0
f14:	Fit 17	+1.487e+02	+1.239e+02	1.0e-01	0	<	150
f15:	Fit 18	+2.367e+00	+2.228e+00	1.0e-01	0	<	150
f16:	Fit 19	+6.993e+01	+6.356e+01	1.0e-01	0	<	150
f17:	Fit 20	+5.935e+00	+6.123e-01	1.0e-01	0	<	150
f18:	Fit 21	+2.821e+01	+3.745e+01	1.0e-01	0	<	150

Miscellaneous for v.9.10.119

- The Kicker dialog modification
- Correction to Output file format for MC plots
- ID modifications for CS-Qgg & CS&dBE plots
- Monte Carlo : modifications for Eloss and Range with Faraday cup
- New Super-FRS configurations
- Kantele calculator: Gamspeed modifications
- "Options" dialog large revision