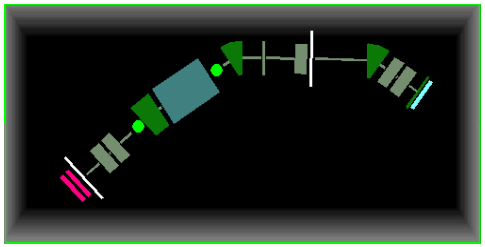
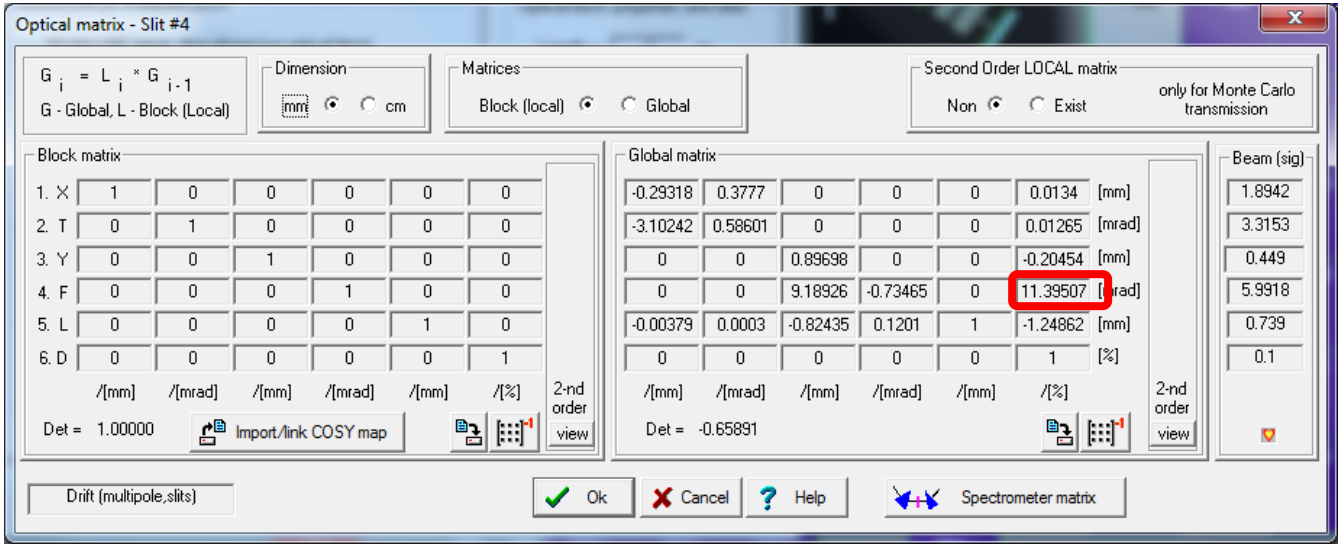
MARS spectrometer #2 : vertical angular dispersion



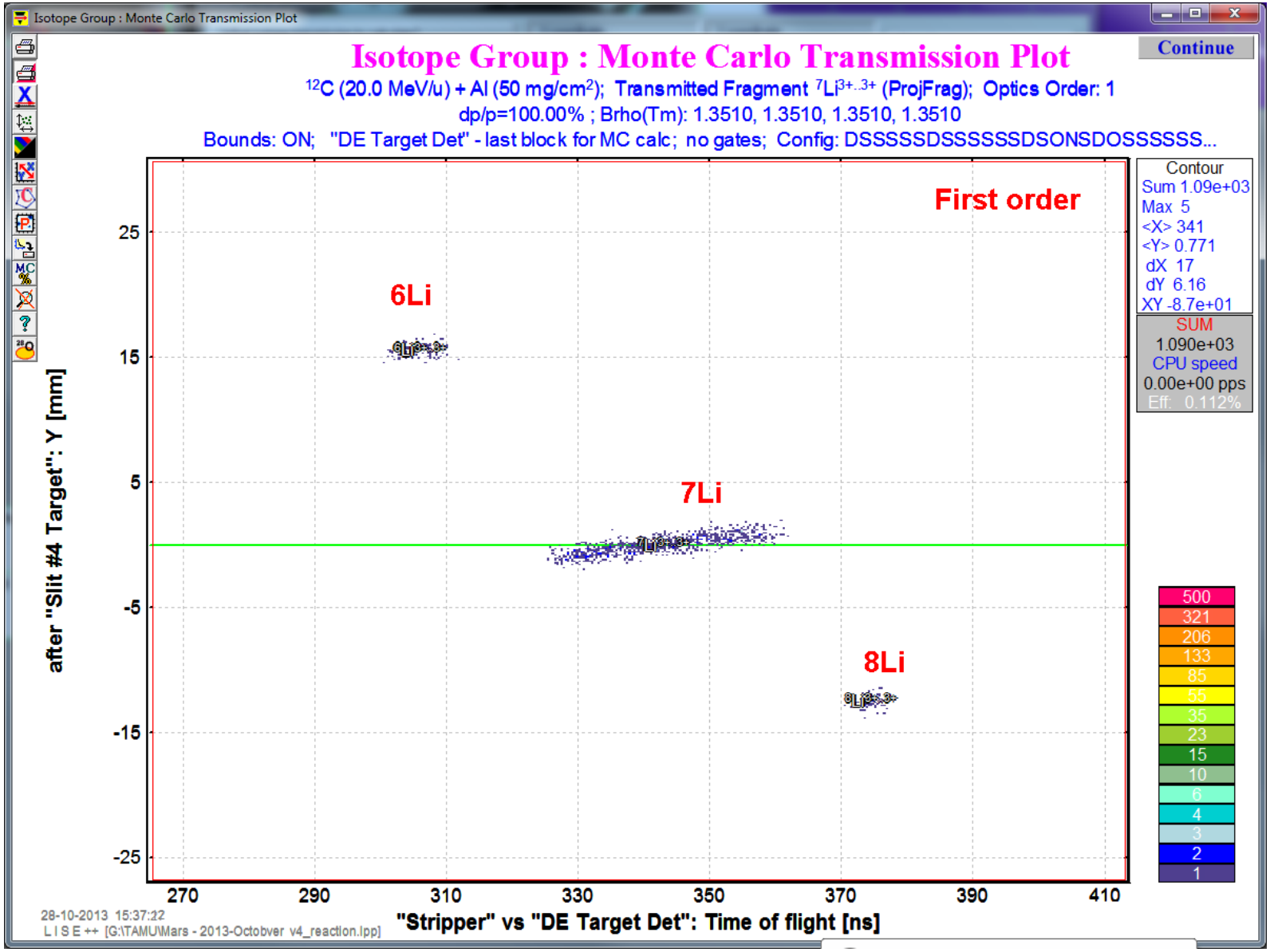


Mars - 2013-Octobver v2_reaction.lpp

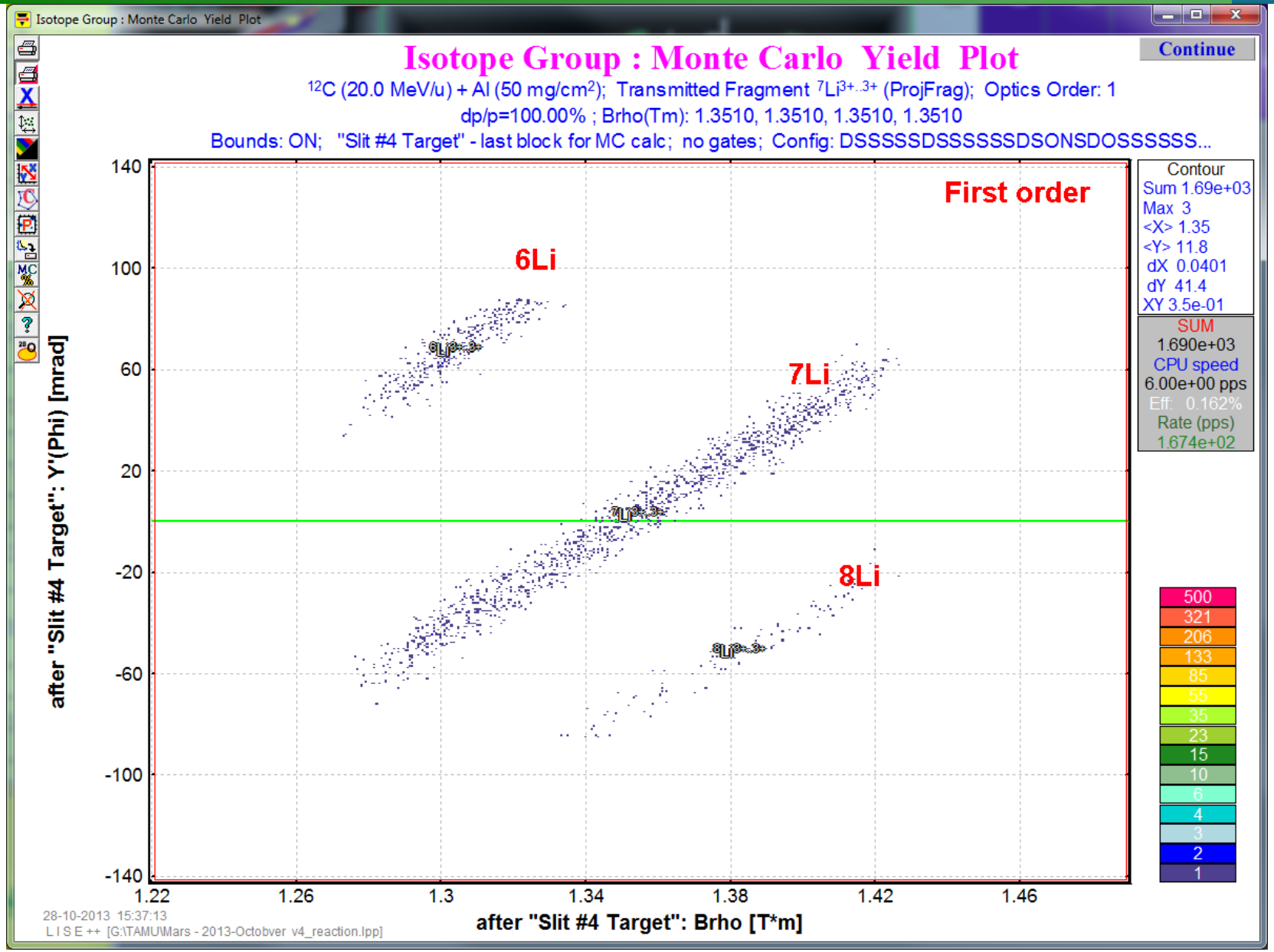
LISE++ file with the MARS extended configuration for this document

http://lise.nscl.msu.edu/9_6/Mars%20-%202013-Octobver%20%20v2_reaction.lpp

MARS spectrometer : Y (A/q –selection) vs. TOF (1st order)

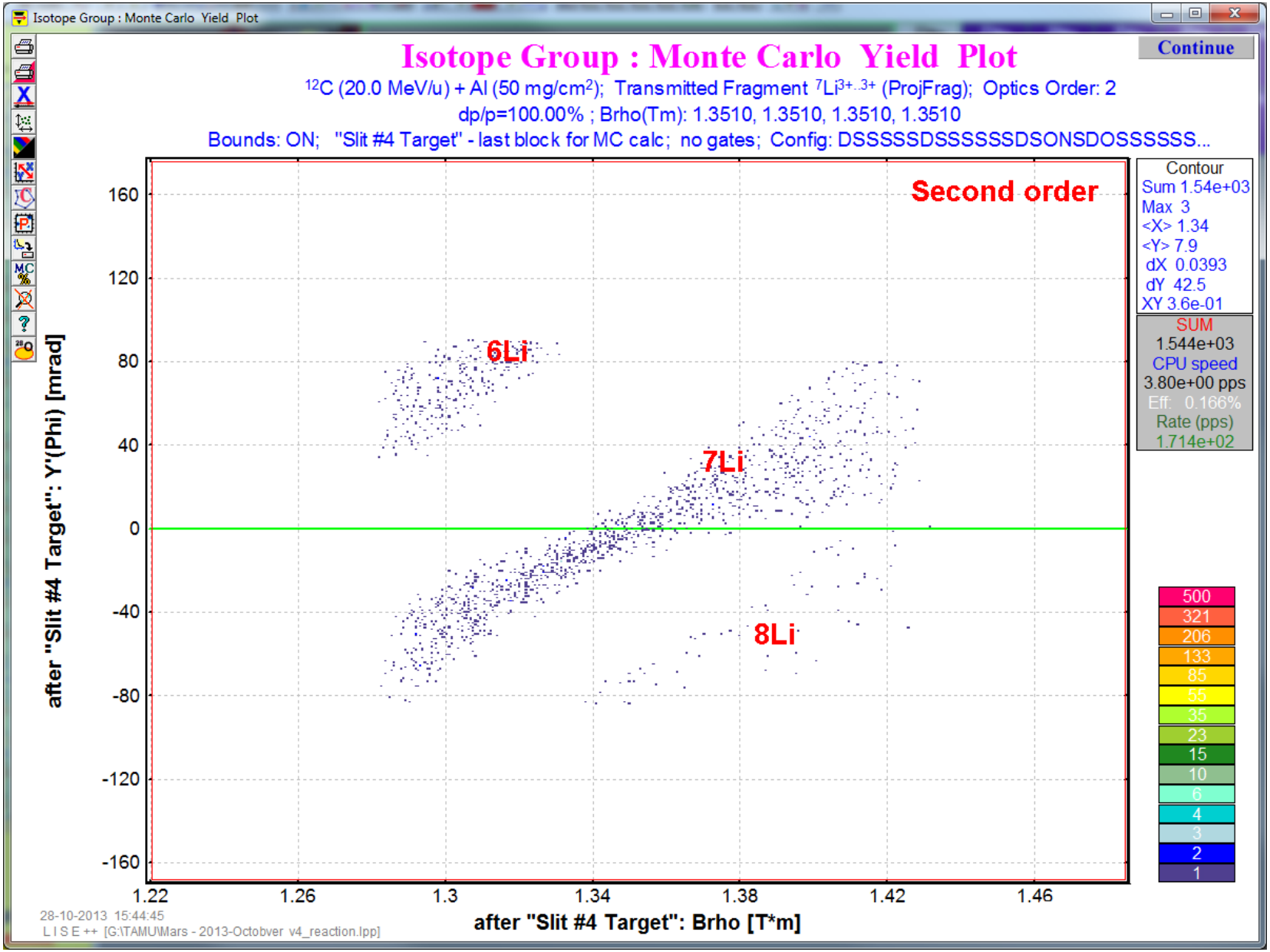


MARS spectrometer : Y' (Momentum–selection) vs. Brho (1st order)

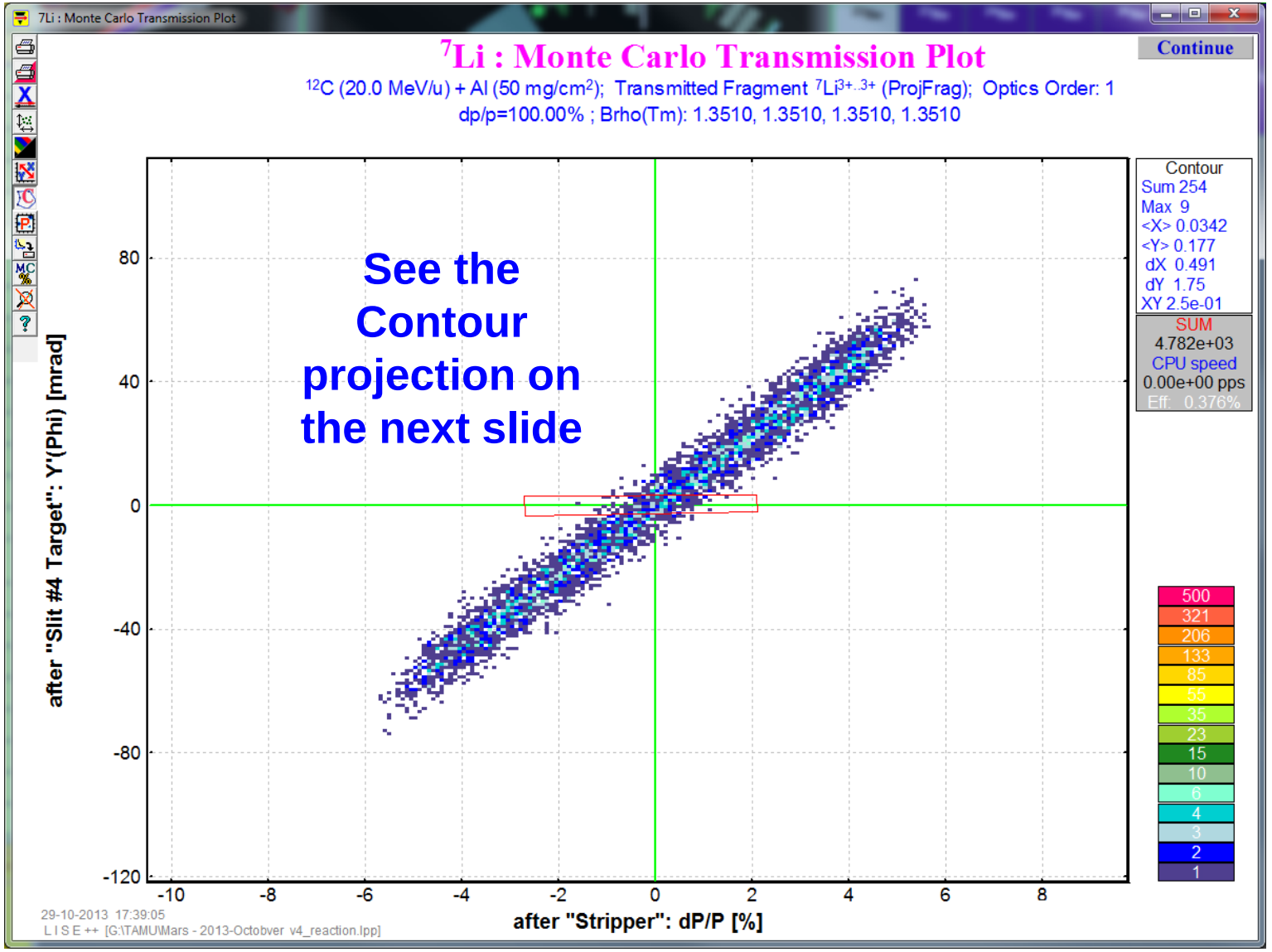


MARS spectrometer : Y (A/q –selection) vs. TOF (2nd order)

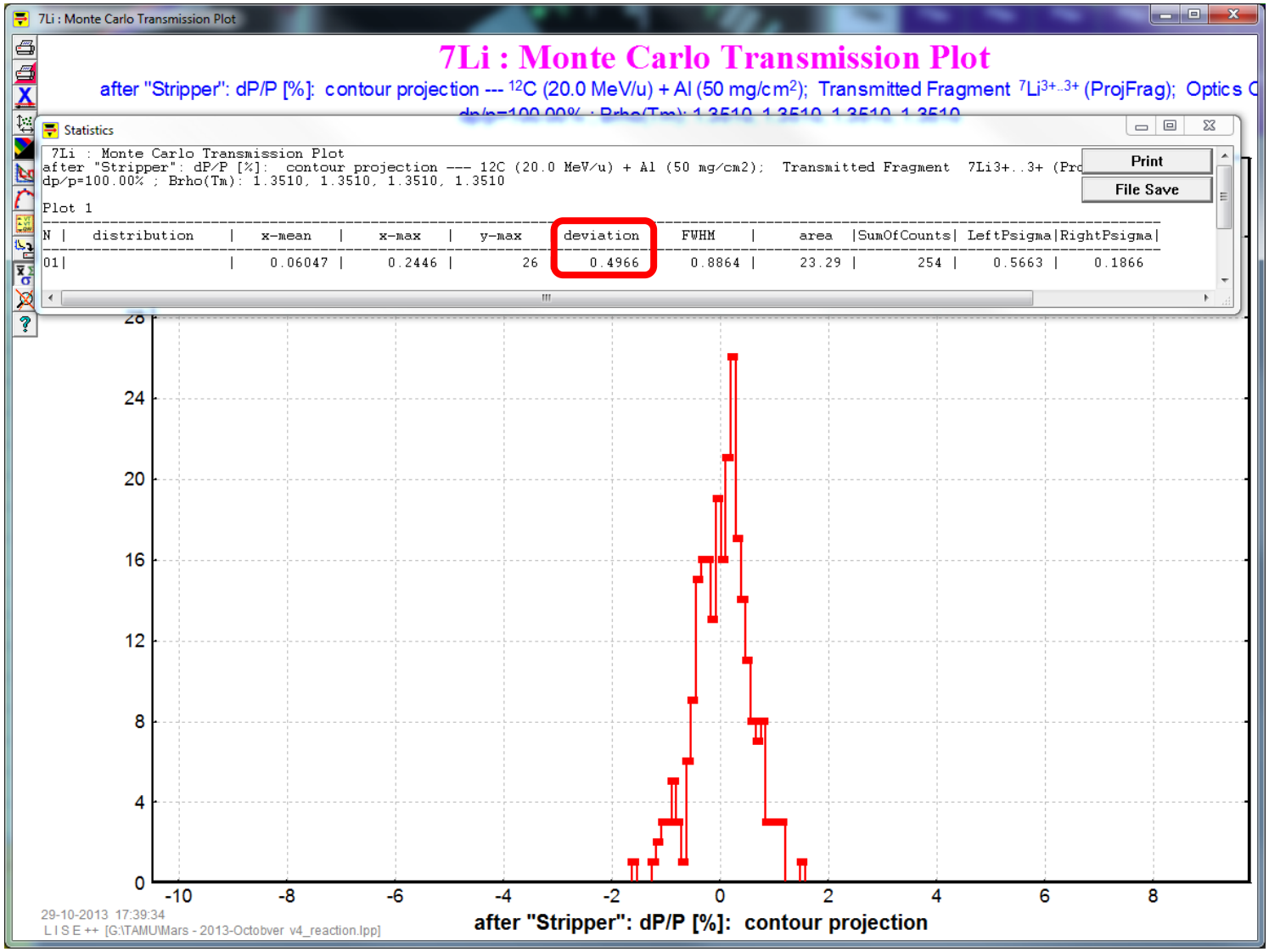
MARS spectrometer : Y' (Momentum–selection) vs. Brho (2nd order)



dp/p optical resolution with angular dispersion

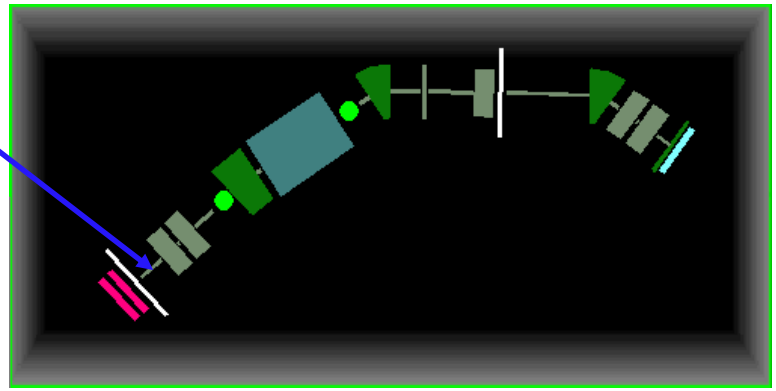


dp/p optical resolution with angular dispersion



dp/p total resolution with angular dispersion

If insert one more PPAC between the last Quad and FP



	MARS			S800 BL	
x, PPAC resolution	1	mm		1	mm
x, 2 PPACs resolution	1.414	mm		1.414	mm
distance between PPACs	0.5	m		1	m
angle	2.83	mrad		1.4	mrad
angular dispersion	11.8	mrad/%		53	mrad/%
dp/p-resolution	0.24%			0.03%	
dp/p-resolution from optics	0.50%				
total dp/p resolution	0.55%				

degrees	rad	sin	Length	Radius
			m	m
0.001	0.000	0.000	1	
0.5	0.009	0.009	1.000013	114.364
1.0	0.017	0.017	1.000051	57.241
1.5	0.026	0.026	1.000114	38.176
2.0	0.035	0.035	1.000203	28.639
2.5	0.044	0.044	1.000318	22.916
3.0	0.052	0.052	1.000457	19.101
3.5	0.061	0.061	1.000623	16.376
4.0	0.070	0.070	1.000813	14.332
4.5	0.079	0.078	1.001029	12.743
5.0	0.087	0.087	1.001271	11.471
5.5	0.096	0.096	1.001538	10.432
6.0	0.105	0.105	1.001831	9.565
6.5	0.113	0.113	1.002149	8.832
7.0	0.122	0.122	1.002493	8.204
7.5	0.131	0.131	1.002862	7.660
8.0	0.140	0.139	1.003257	7.184
8.5	0.148	0.148	1.003678	6.765
9.0	0.157	0.156	1.004125	6.392
9.5	0.166	0.165	1.004598	6.058
10.0	0.175	0.174	1.005096	5.758
10.5	0.183	0.182	1.00562	5.487

Assuming rectangle shape

NOTE: in the future LISE++ should calculate itself the angle to compensate dp/p dispersion with taking a shape into account