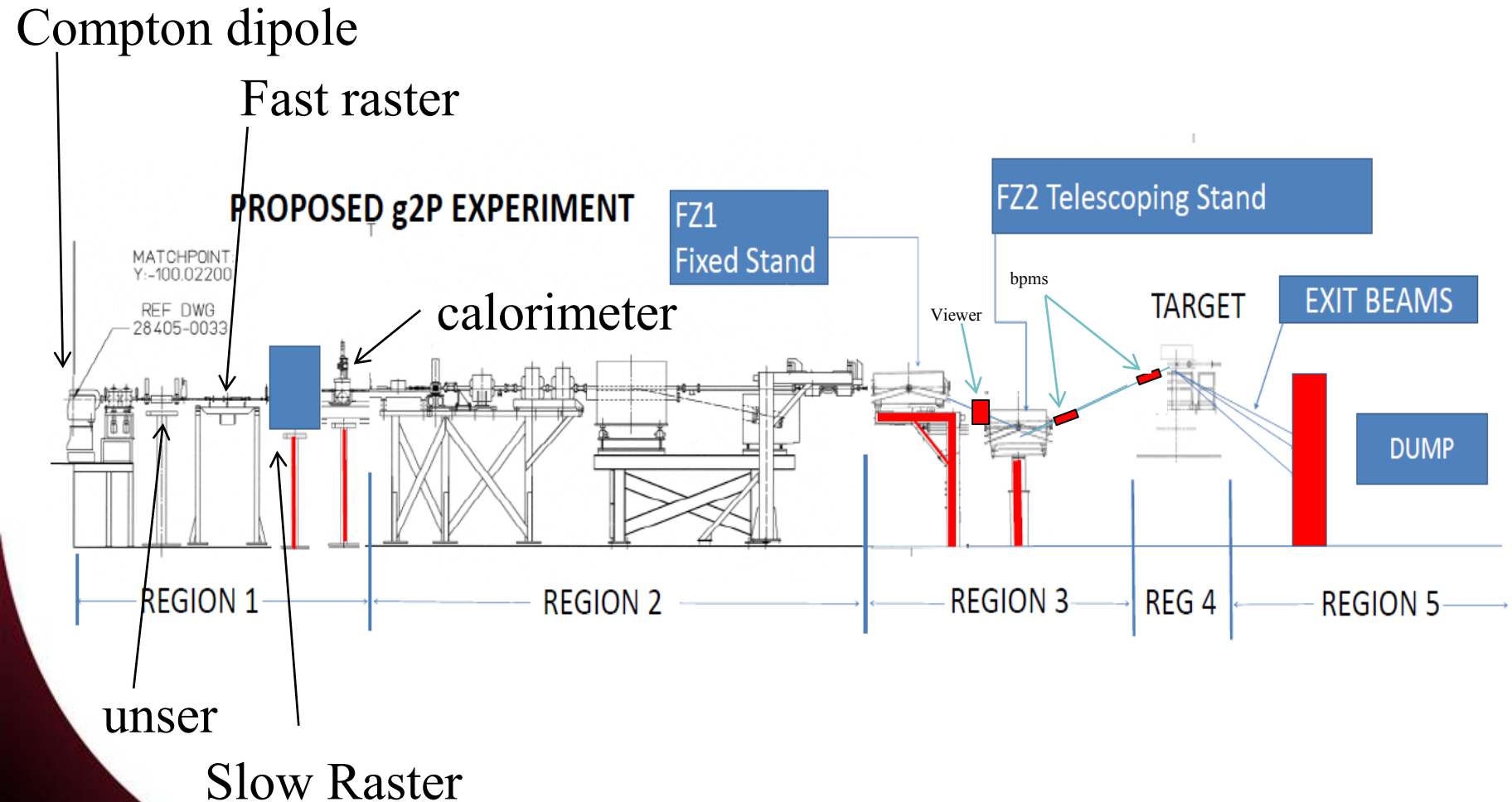


Hall A beamline at 6 GeV and 12 GeV

Yves Roblin, CASA

Proposed Layout



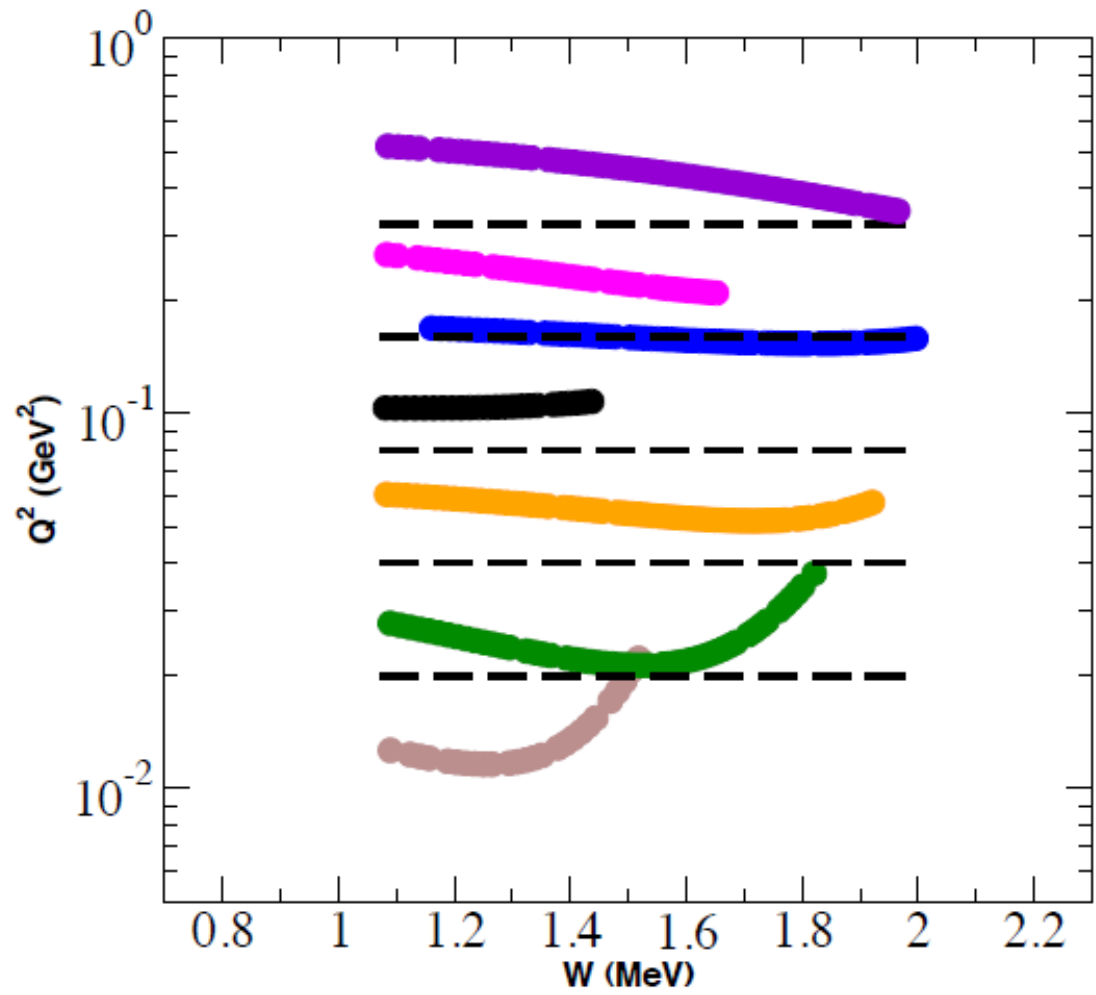
Experimental Plan 05/11/11

unique configurations

<u>Run #</u>	<u>Beam Energy</u>	<u>Beam Current</u>	<u>Target Angle</u>	<u>Target Location</u>	<u>Septa Magnet</u>	<u>Dump</u>	<u>Target Material</u>	<u>Target field</u>	<u>Comments</u>
29b	1.159	50-150nA	90	87 cm upstream	G2p	YES-6deg	Hall A Dump	NH3	2.5T
32	1.159	50-150 nA	20	87 cm upstream	GEP	YES	Hall A dump	NH3	2.5 T
33	1.706	50-150 nA	20	87 cm upstream	GEP	YES	Hall A dump	NH3	2.5 T
30	1.706	50-150 nA	90	87 cm upstream	G2p	YES-6deg	Hall A dump	NH3	2.5T
39	2.257	50-150 nA	20	87cm upstream	G2P	YES	Hall A dump	NH3	2.5 T
43	2.257	50-150 nA	90	87cm upstream	G2P	YES	Local dump	NH3	2.5 T
27a	2.257	50-130 nA	20	87 cm upstream	G2p	Yes- 6 deg	Local Dump	NH3	5.01T
28a	2.257	50-130 nA	90	87 cm upstream	g2p	Yes - 6 deg	Local Dump	NH3	5.01 T
17	3.355	50-130 nA	0	87 cm upstream	g2p	Yes - 6 deg	Hall A Dump	NH3	5.01 T
15a	3.355	50-130 nA	90	87 cm upstream	g2p	Yes - 6 deg	Local Dump	NH3	5.01 T
26	1.159***	50-130 nA	90	At pivot	No - 12.5 deg	Local Dump	N/A	2.5 T	Optics Transform
19a	2.257	50-130 nA	90	At pivot	g2p No - 12.5 deg	Local Dump	NH3	5.01 T	
21a	2.257	50-130 nA	90	At pivot	GEP No - 12.5 deg	Local Dump	NH3	5.01 T	
23a	3.355	50-130 nA	90	At pivot	g2p No - 12.5 deg	Local Dump	NH3	5.01 T	
25a	3.355	50-130 nA	90	At pivot	GEP No - 12.5 deg	Local Dump	NH3	5.01 T	

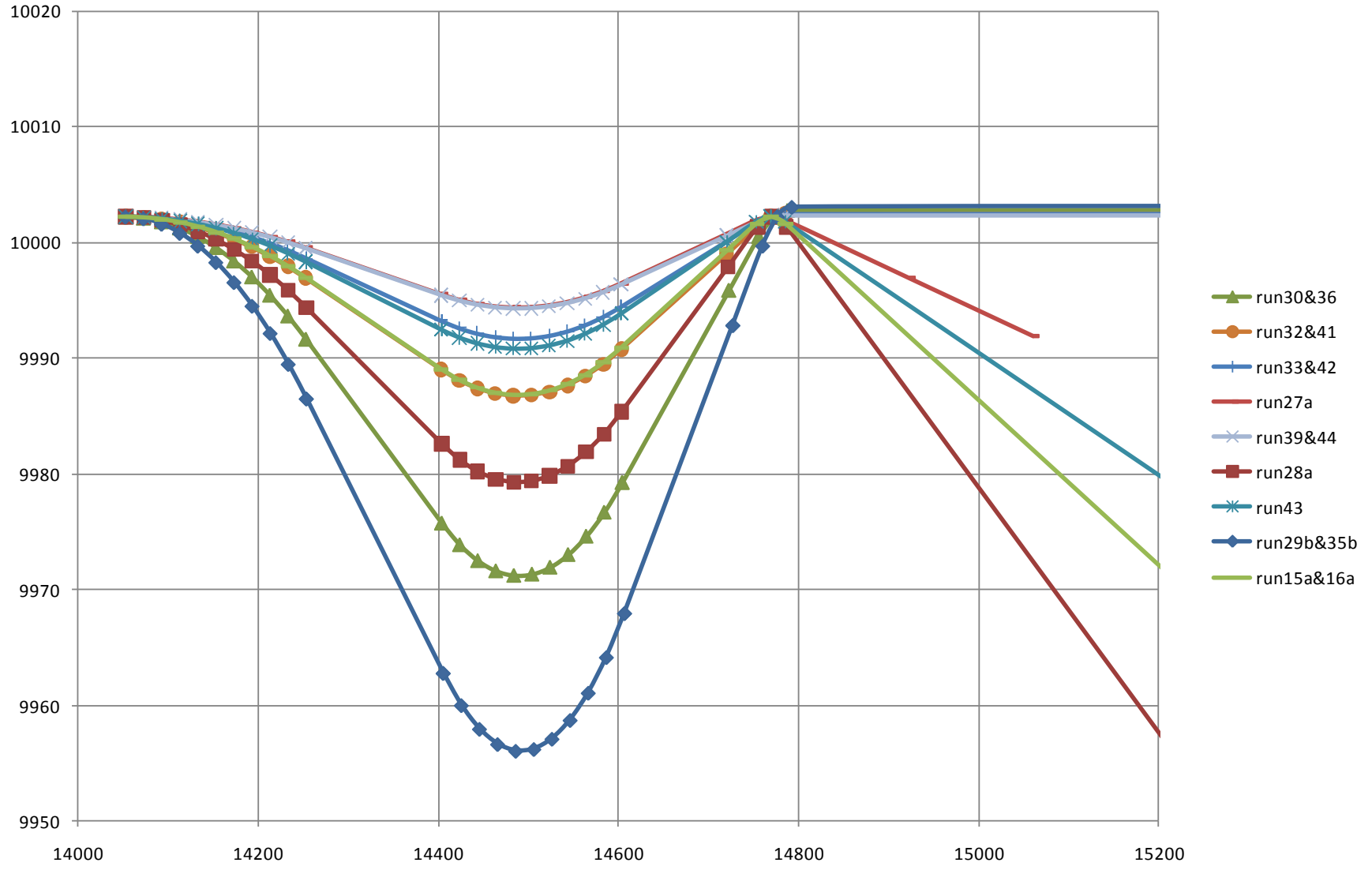
P	Target θ	Target B	Run #	Incoming θ	Tilting angle	Outgoing θ
1.159 (2)	90	2.5T	29b/35b	11.94	5.97	0.0
1.159 (2')	20	2.5T	32/41	4.04	2.02	0.0
1.706 (3')	20	2.5T	33/42	2.74	1.37	0.0
1.706 (3)	90	2.5T	30/36	8.06	4.03	0.0
2.257 (1')	20	2.5T	39/44	2.07	1.04	0.0
2.257 (6,4)	90	5.01T	28a	6.078	0.0	-6.078
2.257 (4')	20	5.01T	27a	2.075	0.0	-2.075
2.257 (1)	90	2.5T	43	3.03	0.0	-3.03
3.355 (5,8)	90	5.01T	15a/16a	4.086	0.0	-4.086

Optimize to kinematics

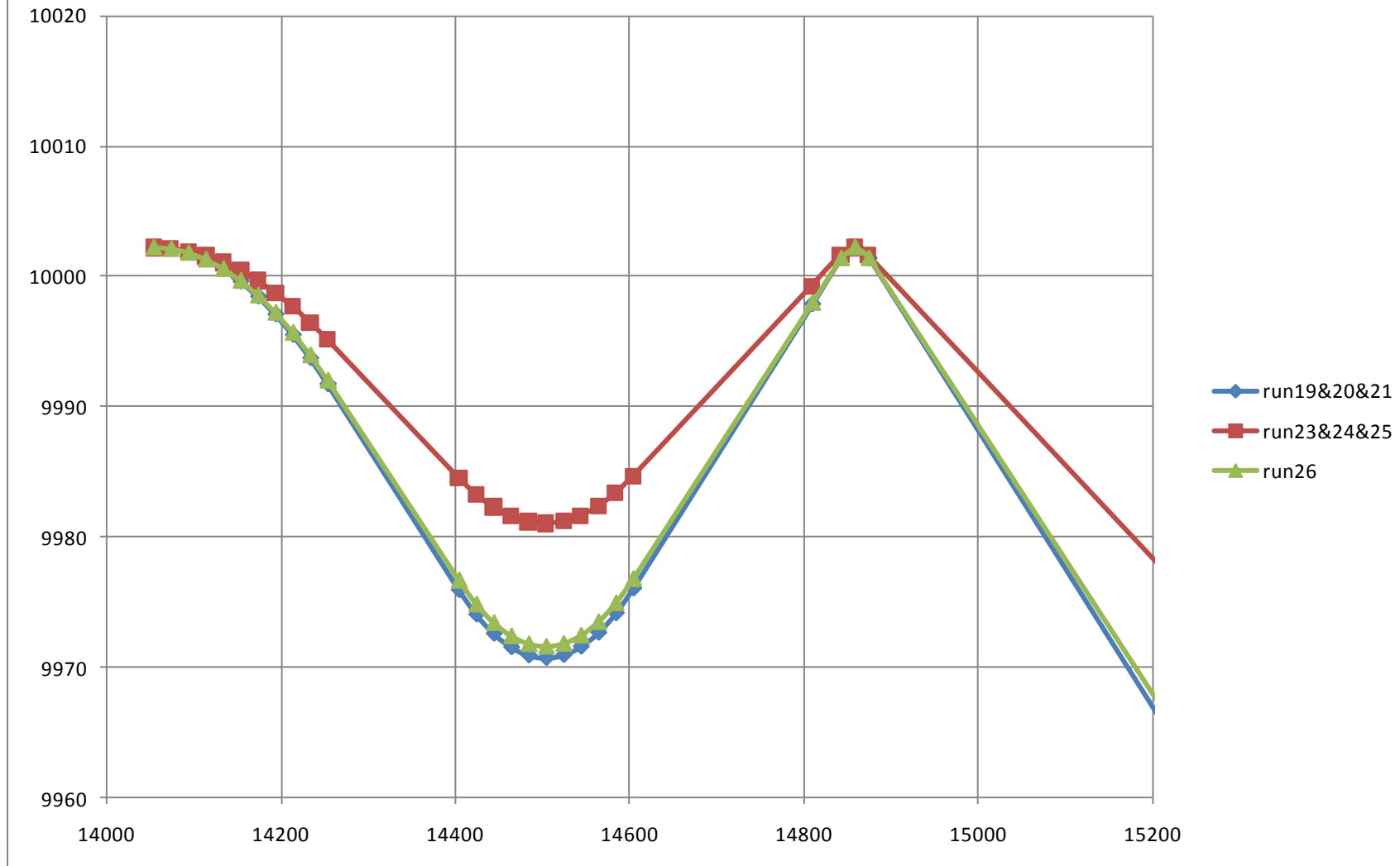


K. Slifer

septa runs



pivot runs



12 GeV modifications

Beam line specifications at 11 GeV (out years)

Hall	Emittance	Energy spread (σ)	Spot size (s)
A	$\epsilon_x < 10$ nm-rad, $\epsilon_y < 5$ nm-rad	12 GeV: 0.05% 2-4 GeV: 0.003%	12 GeV: $\sigma_x < 400\mu\text{m}$, $\sigma_y < 200\mu\text{m}$ 2-4 GeV: $\sigma_y < 100\mu\text{m}$

Magnet upgrades

Power supplies upgraded for dipole string

MQA1C02, C04, C05,C08,C12, H01
upgraded to 20 A power supply (QK)

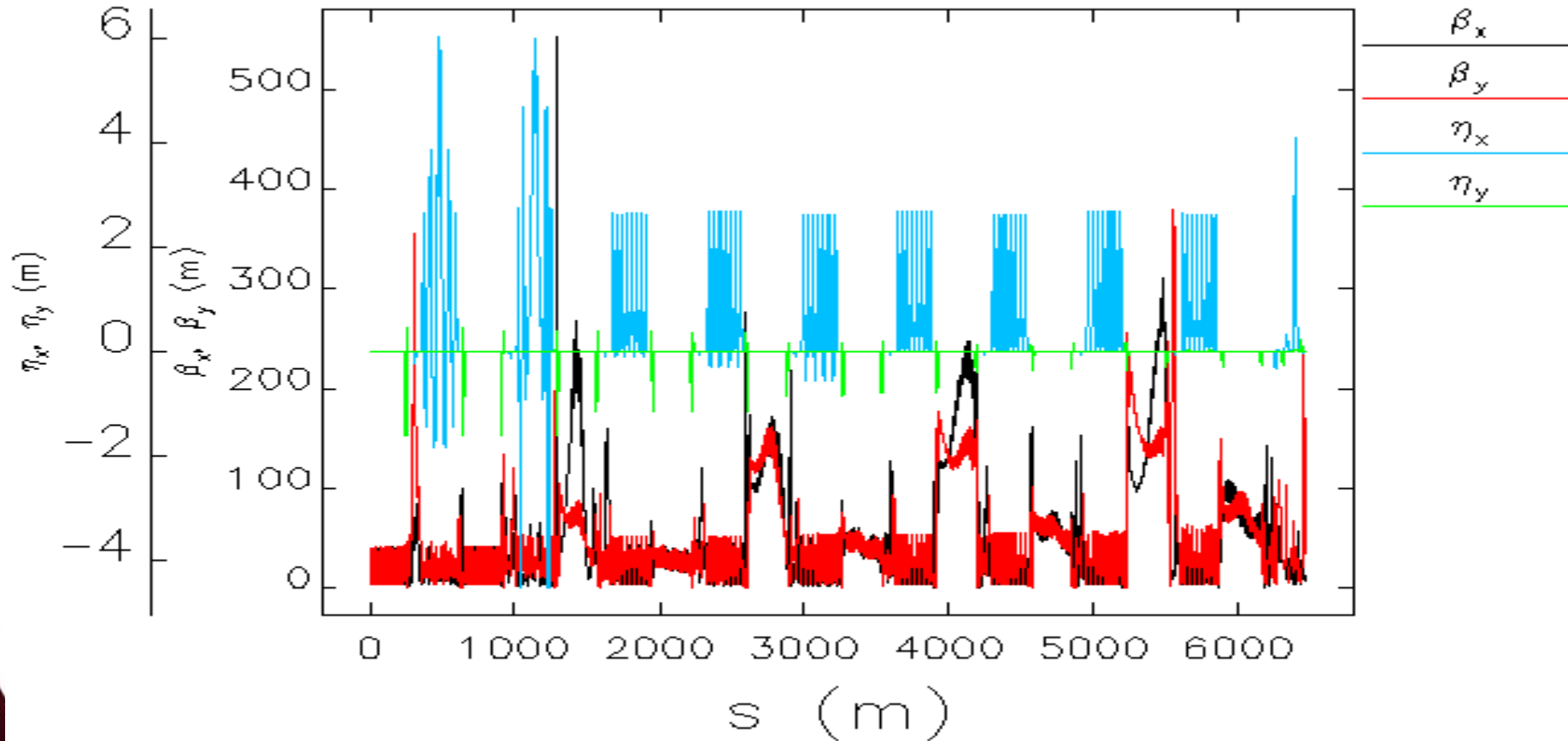
New magnets

Move C19/C20 on drift before compton chicane

Replace C19/C20 by QR quads.

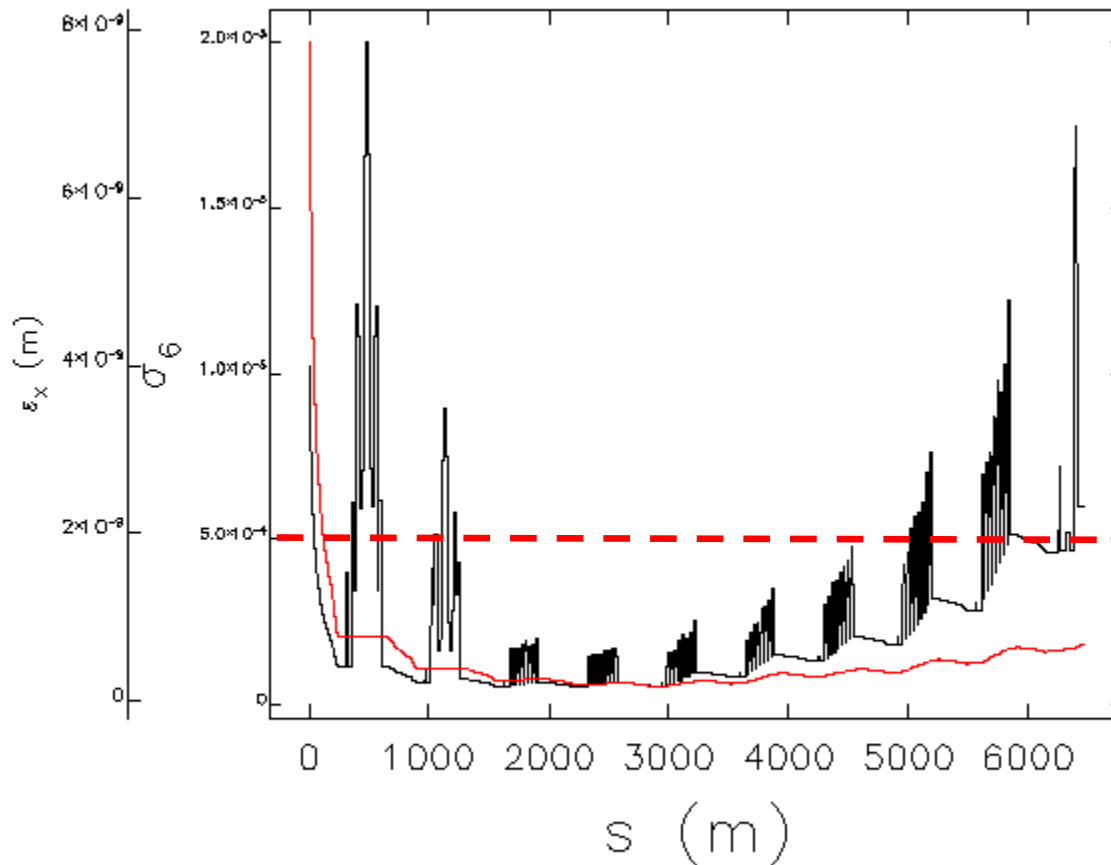


Injector to Hall A at 11 GeV



Twiss parameters--input: l1ha.ele lattice: l1ha.lte

Emittance and energy spread

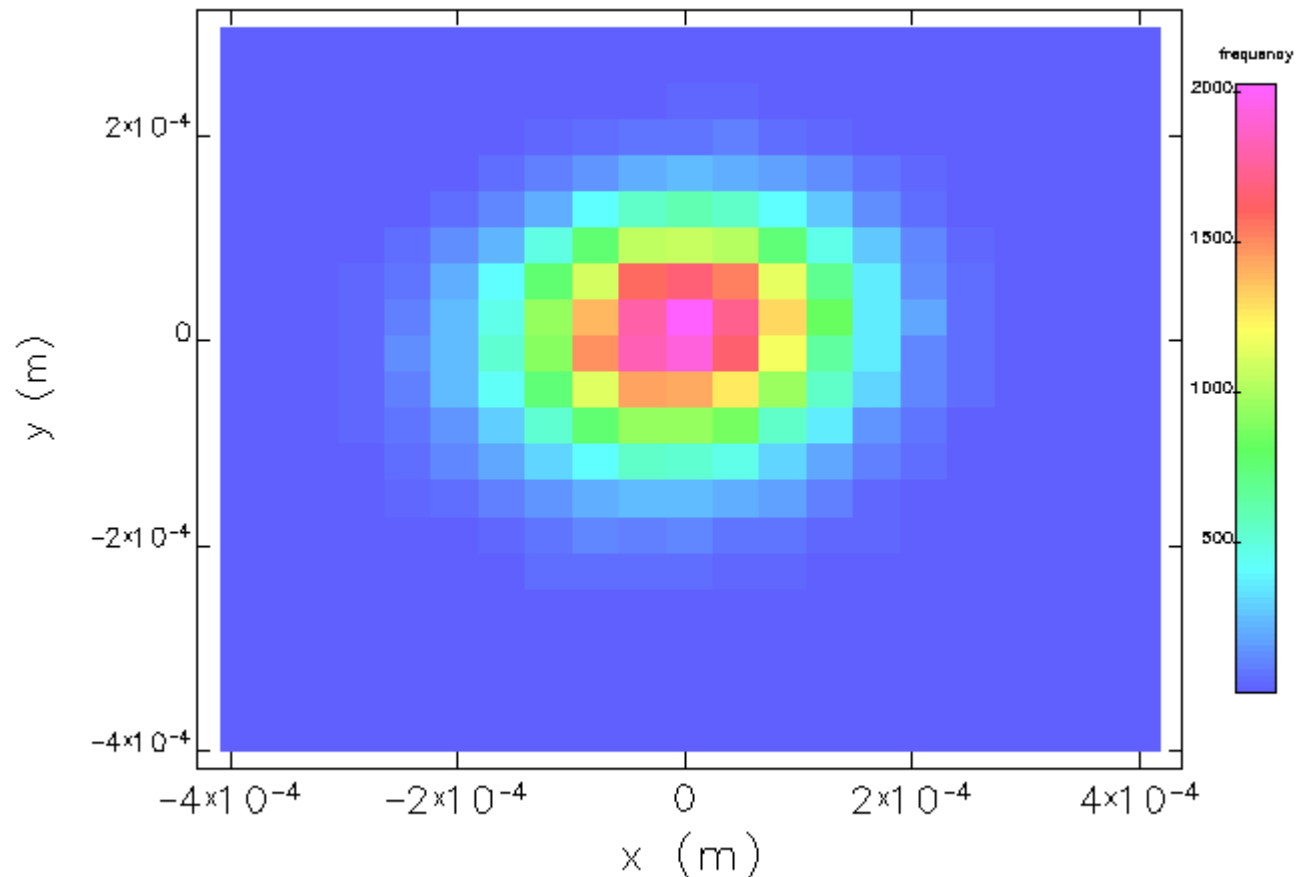


Out year
specs

sigma matrix--input: l1 ha.ele lattice: l1 ha.lte

Spot at compton

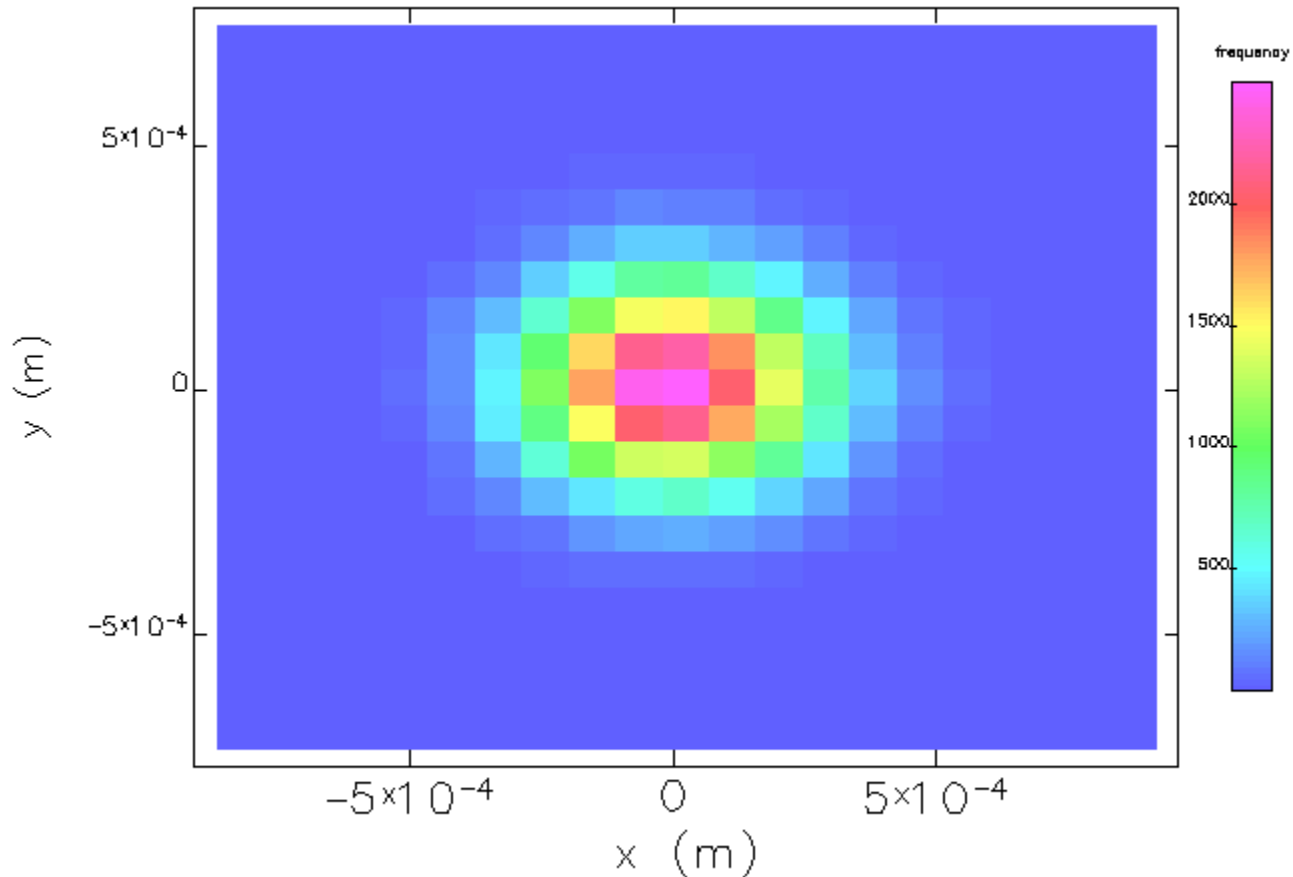
Data from SDDS file comptonh.sdds, table 1



frequency as a function of x and y

Spot at target 200x170

Data from SDDS file bspoth.sdds, table 1



frequency as a function of x and y

conclusions

1. G2P/GEP installation layout finalized
2. 11 GeV beamline simulated and specs will be met
3. Future experiments needing specific beamlines, please let me know as the proposal writing stage, I can assist.