

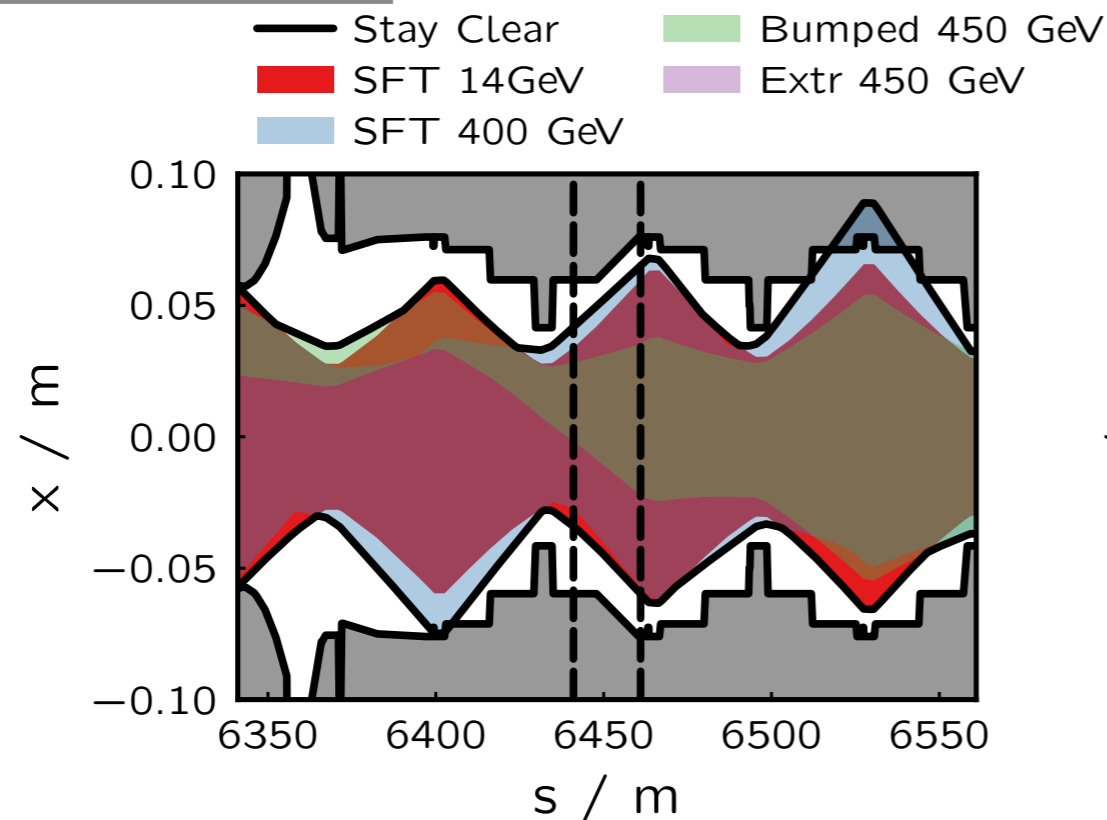
Stay clear region for GF PoP

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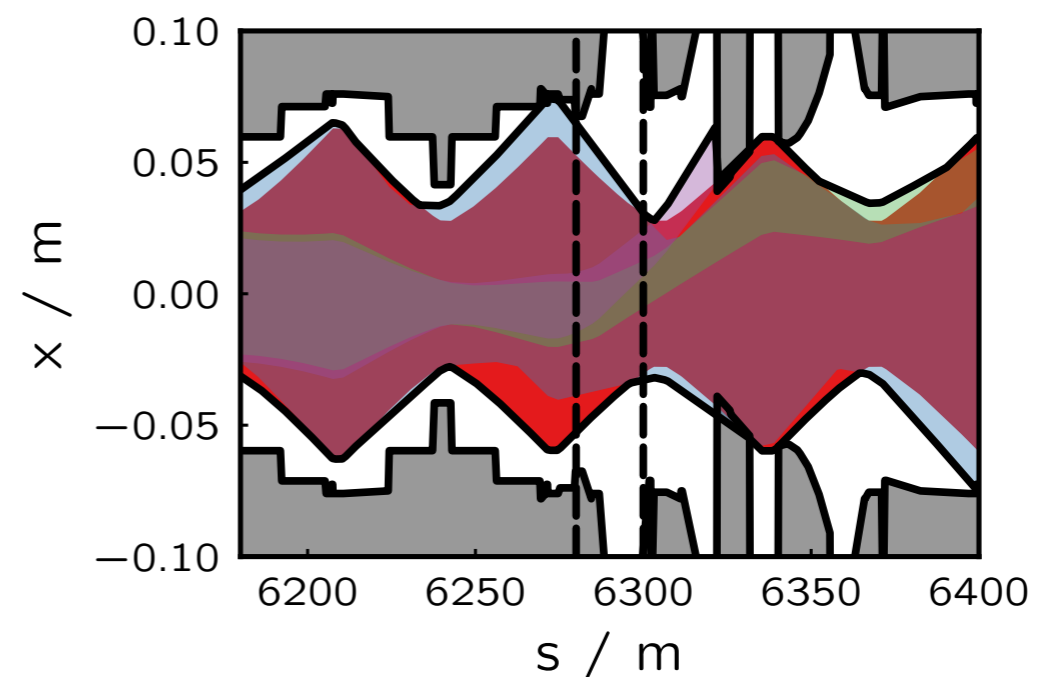
Stay clear region

- In horizontal need to consider:
 - Injected SFTPRO beam => 14 GeV and 12 mm.mrad emittance (plus alignment and error tolerances)
 - Slowly extracted separatrix => 400 GeV protons on 1/3 resonance, asymmetric!
 - Bumped or extracted beam => not a concern anymore in dispersion suppressor
- In vertical only the injected SFTPRO beam is considered as being the largest => 14 GeV with 8 mm.mrad emittance (plus alignment and error tolerances)

Dispersion suppressor



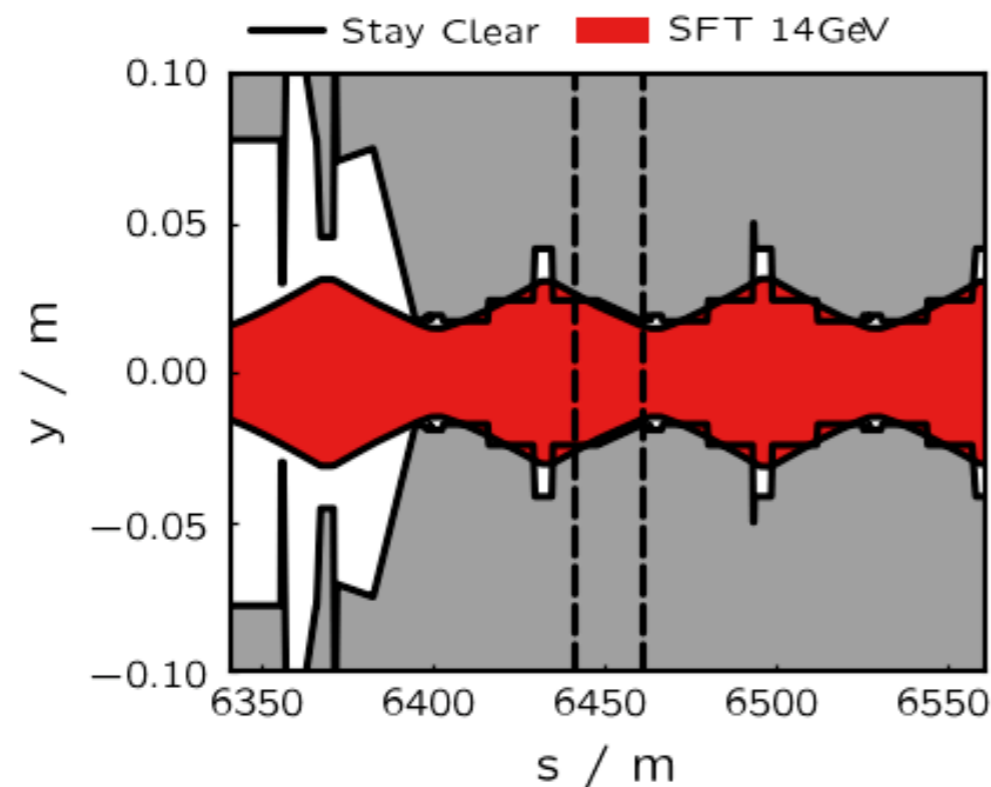
Previous LSS6 location



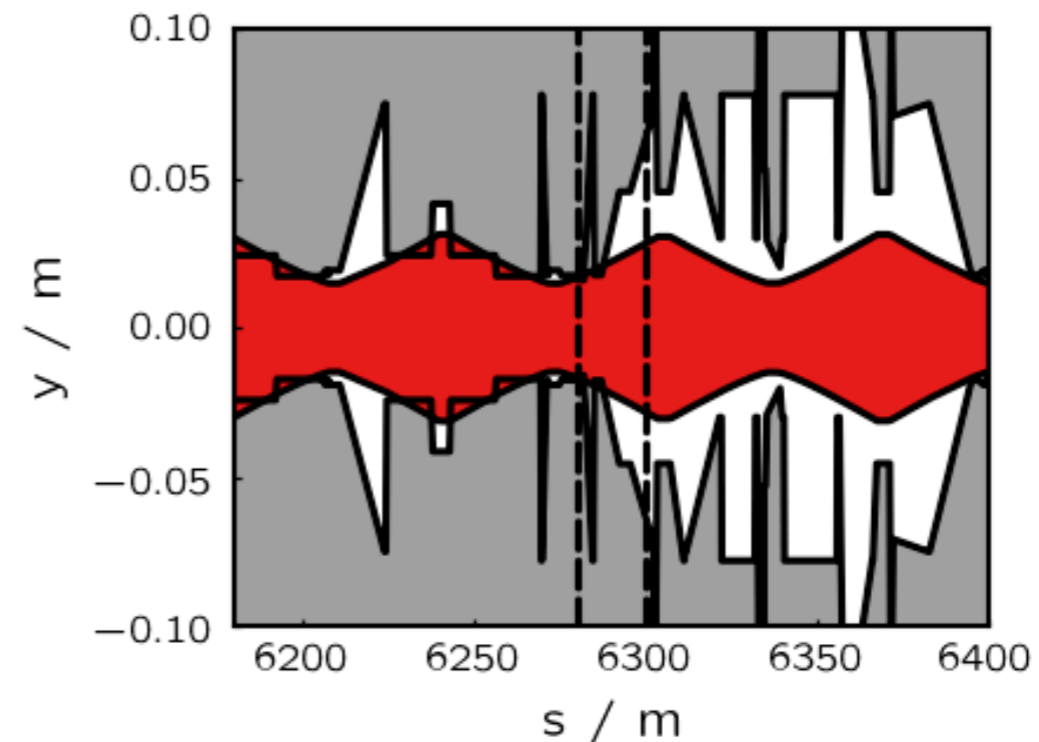
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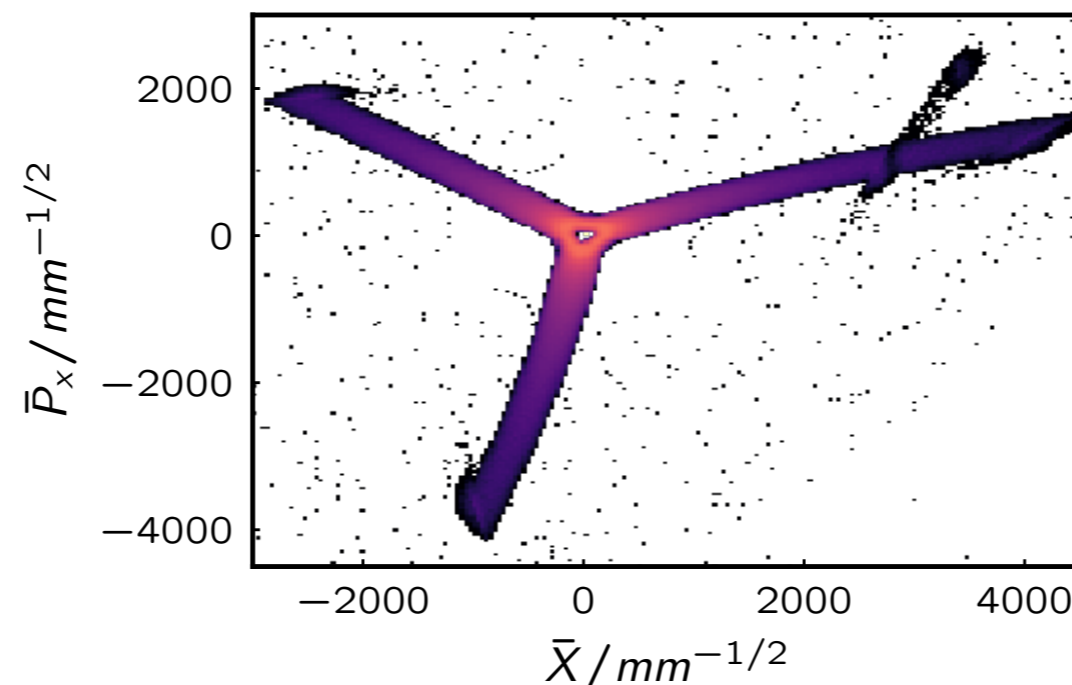


Previous LSS6 location



Slowly extracted beam

- SPS provides beam to the NA experiments:
 - 400 GeV protons (and ions, but this is not taken into account)
 - 4.8 s spill using 1/3 resonant slow extraction
- Strong harmonic sextupoles used to drive the resonance
 - Machine tune swept across the 80/3 to extract particles according to their momentum
 - When particle unstable, amplitude growth of maximum 20 mm (aperture of the ES gap) => almost the full horizontal machine aperture is filled with beam
 - CO bump in the extraction region to create ad hoc aperture restriction and hence to extract the unstable particles
- For tight apertures (and with no proper alignment) already seen significant beam loss and activation of the surrounding => well in agreement what predicted using the simulations used to calculate stay clear region!



stay_clear_GF => Dispersion suppressor LSS6

	x_max (mm)	x_min (mm)	y_max (mm)	y_min (mm)	Delta_x (mm)	Delta_y (mm)
6441.4015154848	42.14	-34.35	26.29	-26.27	76.49	52.56
6442.40173311143	43.30	-35.51	25.67	-25.66	78.81	51.34
6443.40195073806	44.46	-36.70	25.07	-25.06	81.16	50.12
6444.40216836469	45.62	-37.88	24.46	-24.45	83.50	48.91
6445.40238599132	46.78	-39.06	23.85	-23.84	85.84	47.69
6446.40260361795	47.94	-40.24	23.25	-23.23	88.19	46.48
6447.40282124457	49.10	-41.43	22.64	-22.63	90.53	45.27
6448.4030388712	50.27	-42.70	22.08	-22.07	92.97	44.15
6449.40325649783	51.45	-44.04	21.57	-21.56	95.49	43.13
6450.40347412446	52.62	-45.38	21.06	-21.05	98.00	42.11
6451.40369175109	53.80	-46.72	20.55	-20.54	100.52	41.08
6452.40390937771	54.97	-48.07	20.03	-20.03	103.04	40.06
6453.40412700434	56.15	-49.41	19.52	-19.51	105.56	39.04
6454.40434463097	57.32	-50.75	19.01	-19.00	108.08	38.01
6455.4045622576	58.50	-52.10	18.50	-18.49	110.59	36.99
6456.40477988423	59.67	-53.44	17.99	-17.98	113.11	35.97
6457.40499751085	60.85	-54.78	17.47	-17.47	115.63	34.94
6458.40521513748	62.02	-56.13	16.96	-16.96	118.15	33.92
6459.40543276411	63.20	-57.47	16.45	-16.44	120.66	32.89
6460.40565039074	64.37	-58.81	15.94	-15.93	123.18	31.87