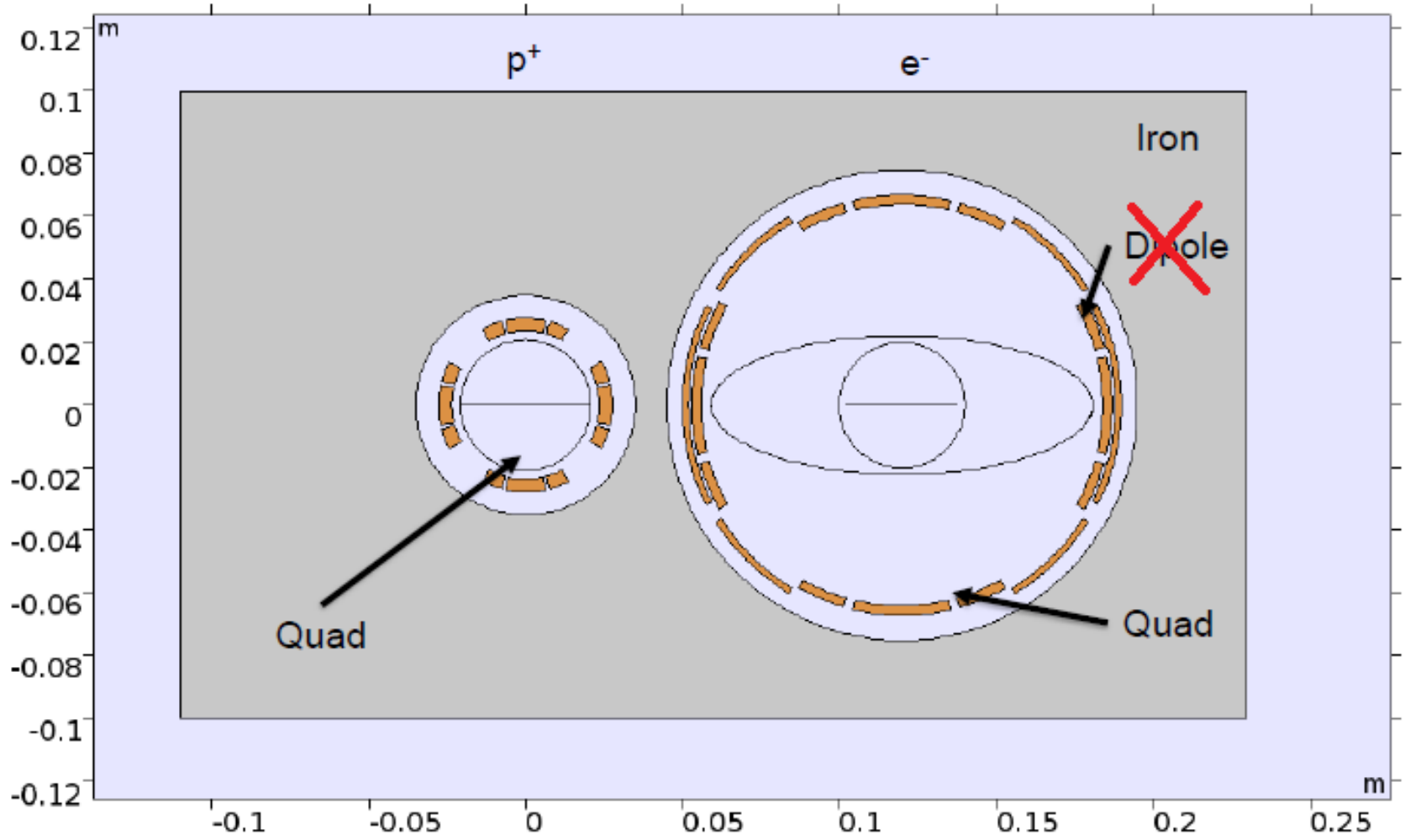
Jan IR Update 01/13/18

Bob Palmer

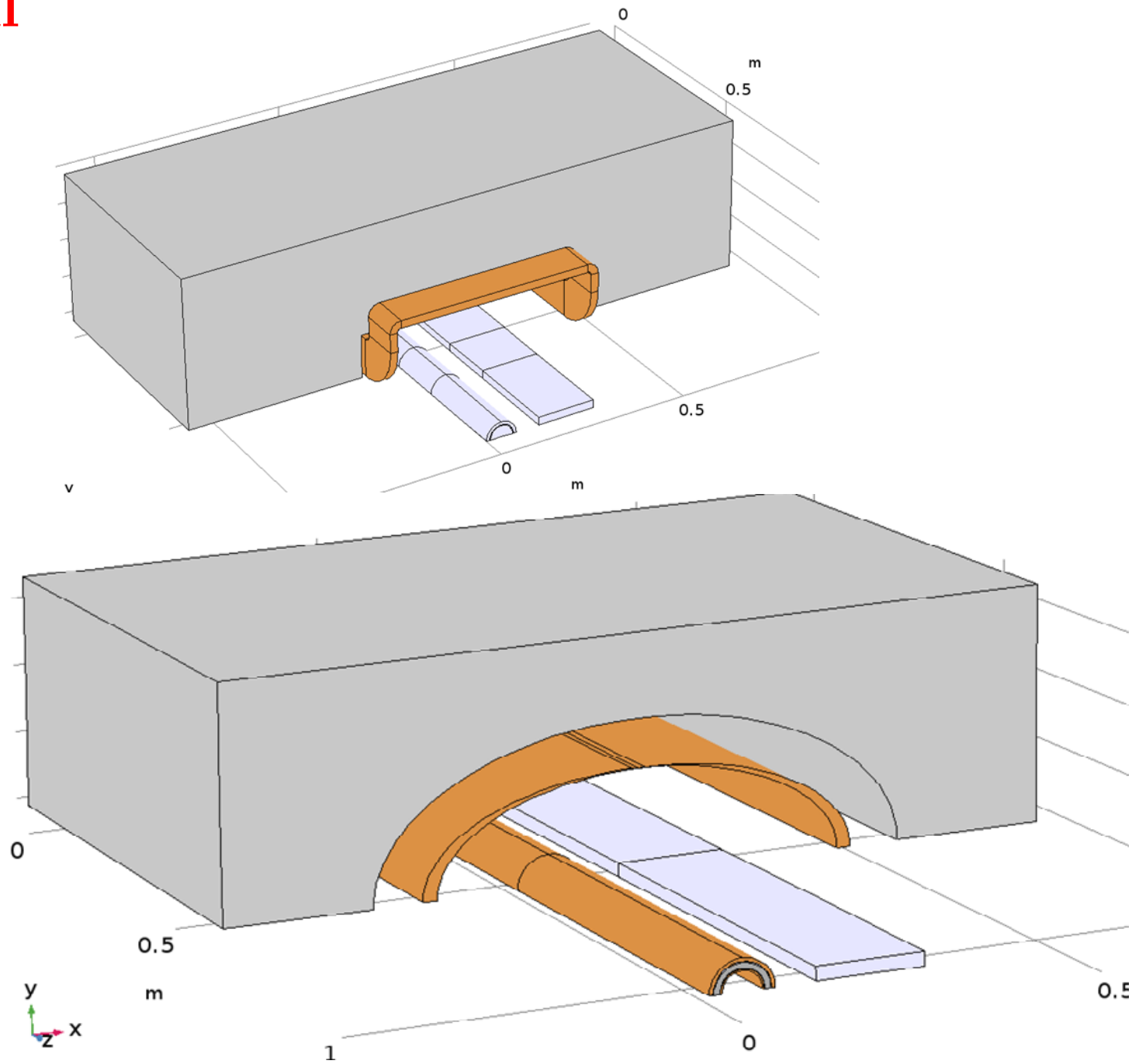
- Tapered C1 with Fe separation
- Elliptical B0
- Separate Function Rear electron magnets

tapered C1 with Fe separation

Based on synchrotron fan from 13.5 sigma electron tails



Elliptical B0

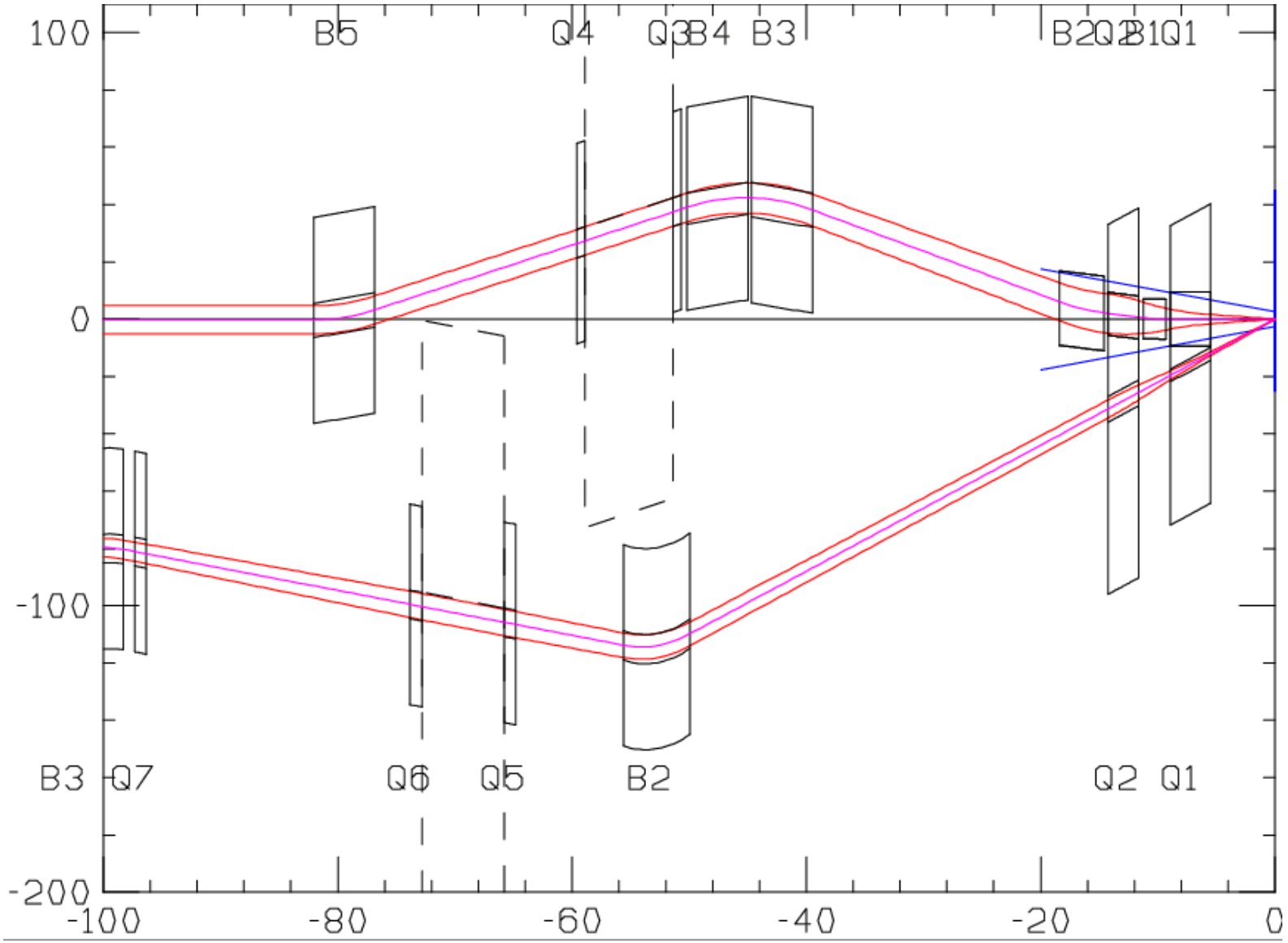


60 x 30

Change to Separate function magnets

- Quadrupole dimensions unchanged
- No bending in focus elements
- Separate bending between Q1 & Q2, and after Q2
- Bending fields set to get same x between B3 and B4
- Quads are aligned with and centred on electron beam
- Avoids high fields at some locations in combined magnets

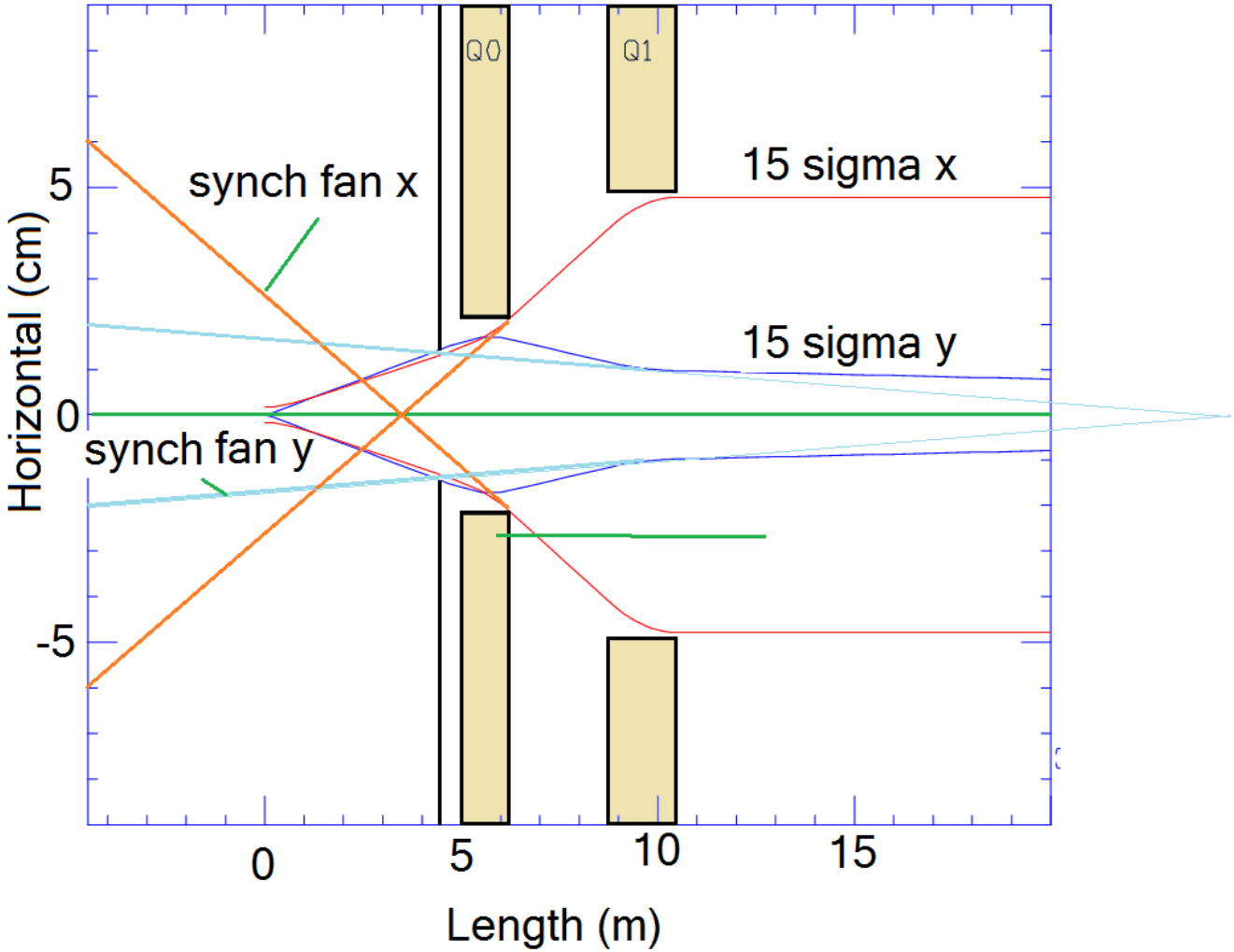
Overall layout



Basically unchanged (Steve has and will change details)

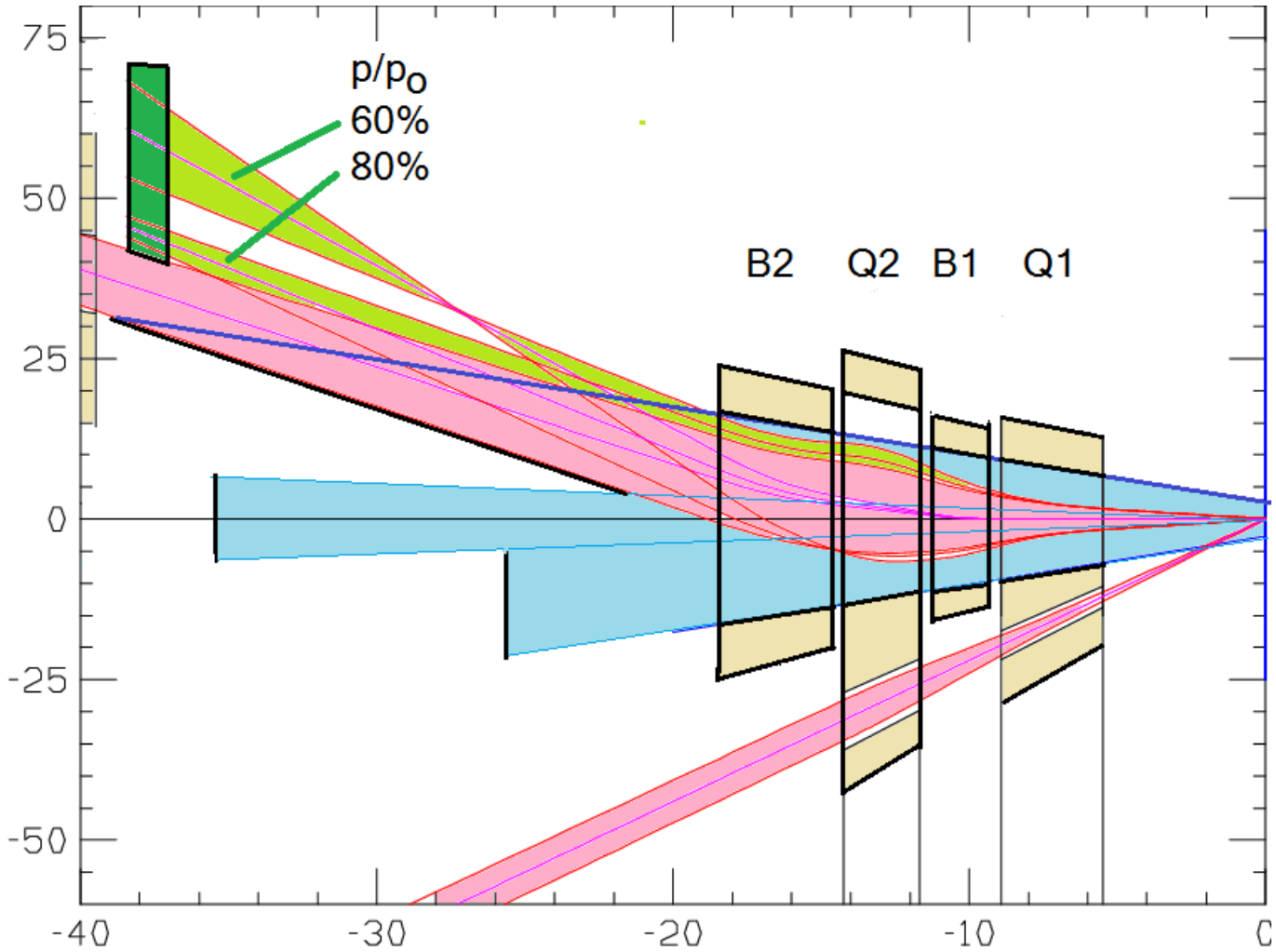
Electron amplitudes & Synchrotron Fan

Shown at 15 sigmas (red=x blue=y) synch fans also shown



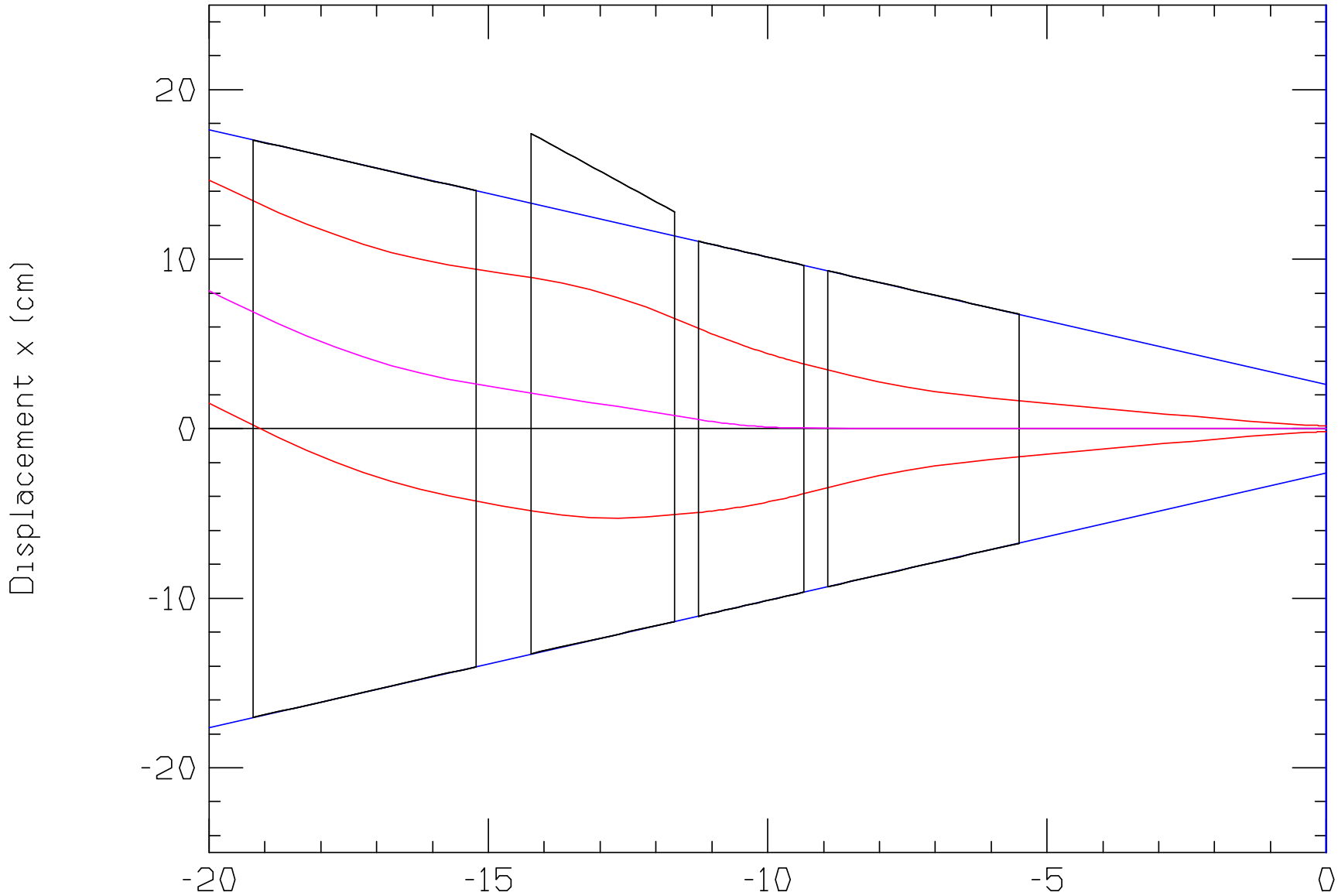
$$x_{synch} \approx 0.75(|L(m)| + 3.5) \quad (cm)$$
$$y_{synch} \approx 0.067(|L(m)| + 25) \quad (cm)$$

Layout of Lum and tag



Basically unchanged but easier magnets to design and simulate

Detail



Magnets

Chrom y=7.82 Chrom x=6.22 mom =18 GeV/c

		L1 m	DL m	gap m	x cm	θ mrad	IR_1 cm	IR_2 cm	B T	Bpt T	Grad) T/m
Q1	3	5.50	3.42	0.43	0.0	0.00	6.75	9.32	0.000	0.383	-4.107
B1	5	9.35	1.89	0.43	0.0	0.00	9.64	11.06	0.164	0.000	0.000
Q2	7	11.67	2.57	0.98	0.7	5.30	12.09	15.34	0.000	0.495	3.227
B2	9	15.22	4.00	20.28	0.0	0.00	14.04	17.04	0.164	0.000	0.000
B3	11	39.50	5.20	0.30	39.5	6.97	6.00	6.00	-0.172	0.000	0.000
B4	13	45.00	5.20	0.50	44.0	-7.00	5.50	5.50	-0.172	0.000	0.000
Q3	15	50.70	0.70	7.50	40.0	-13.72	5.00	5.00	0.000	0.042	-0.840
Q4	17	58.90	0.70	17.26	28.7	-13.72	5.00	5.00	0.000	0.003	-0.060
B5	19	76.86	5.20	40.00	4.1	-6.99	6.00	6.00	0.156	0.000	0.000