

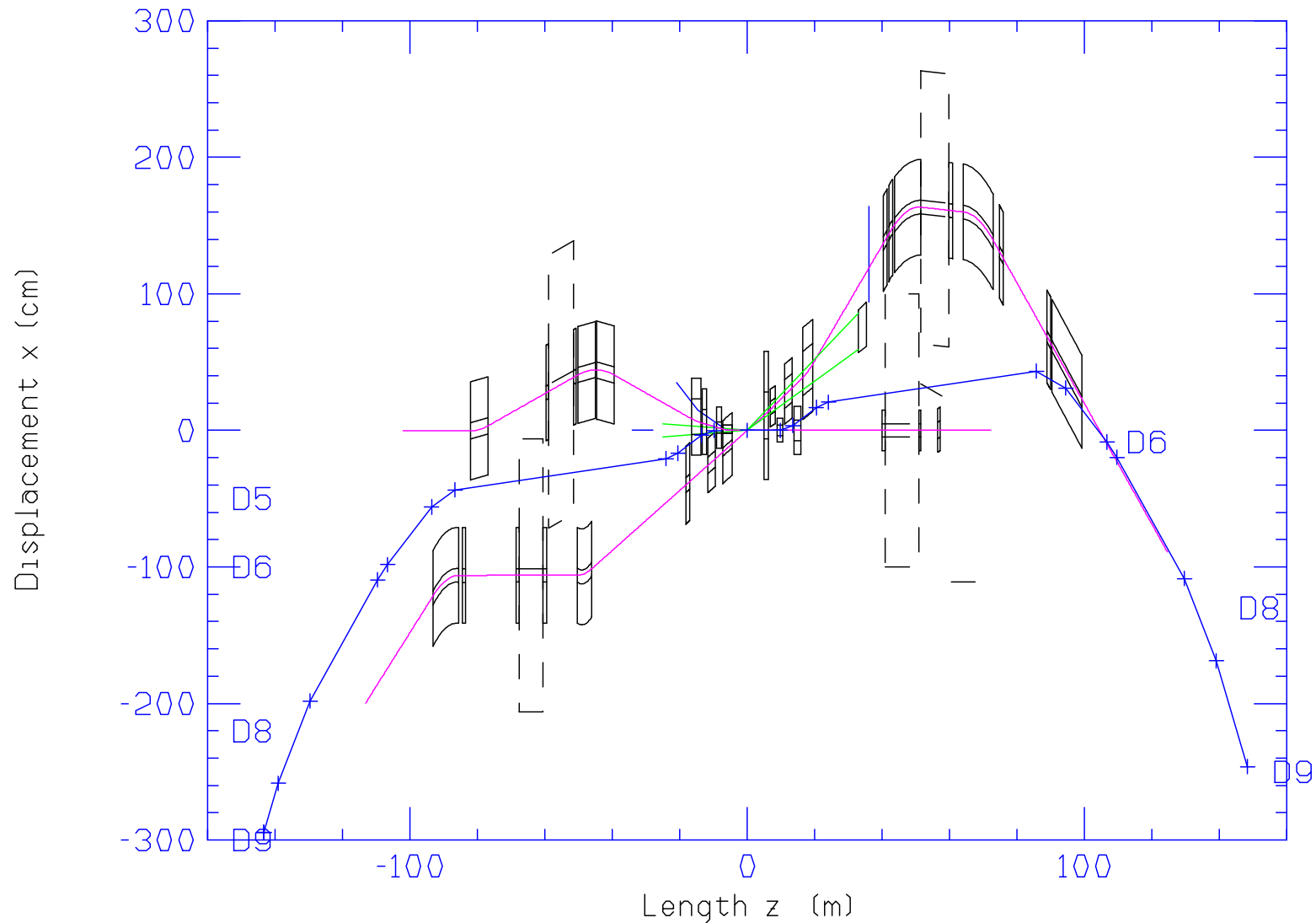
# IR Update

9/8/17

- Rotate IR
- Move neutron Detector Back
- Lower start of Q1
- New magnet fields

# Match without IR rotation

Nnb NC140



Difficulty matching in Rear

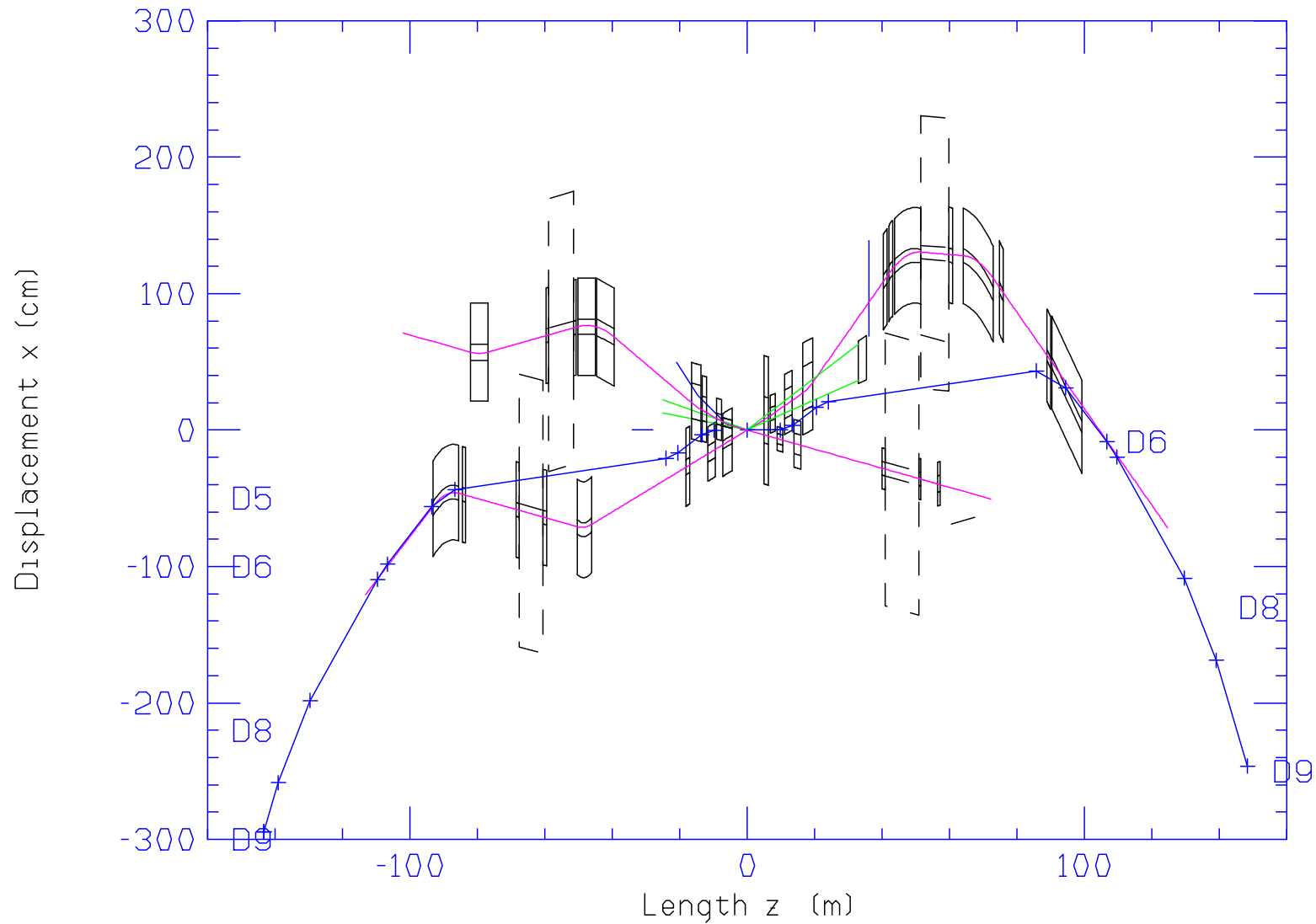
Blue = current RHIC yellow

Loss of spaces to tunnel walls

Match at rear only after D6

# Match with IR rotation

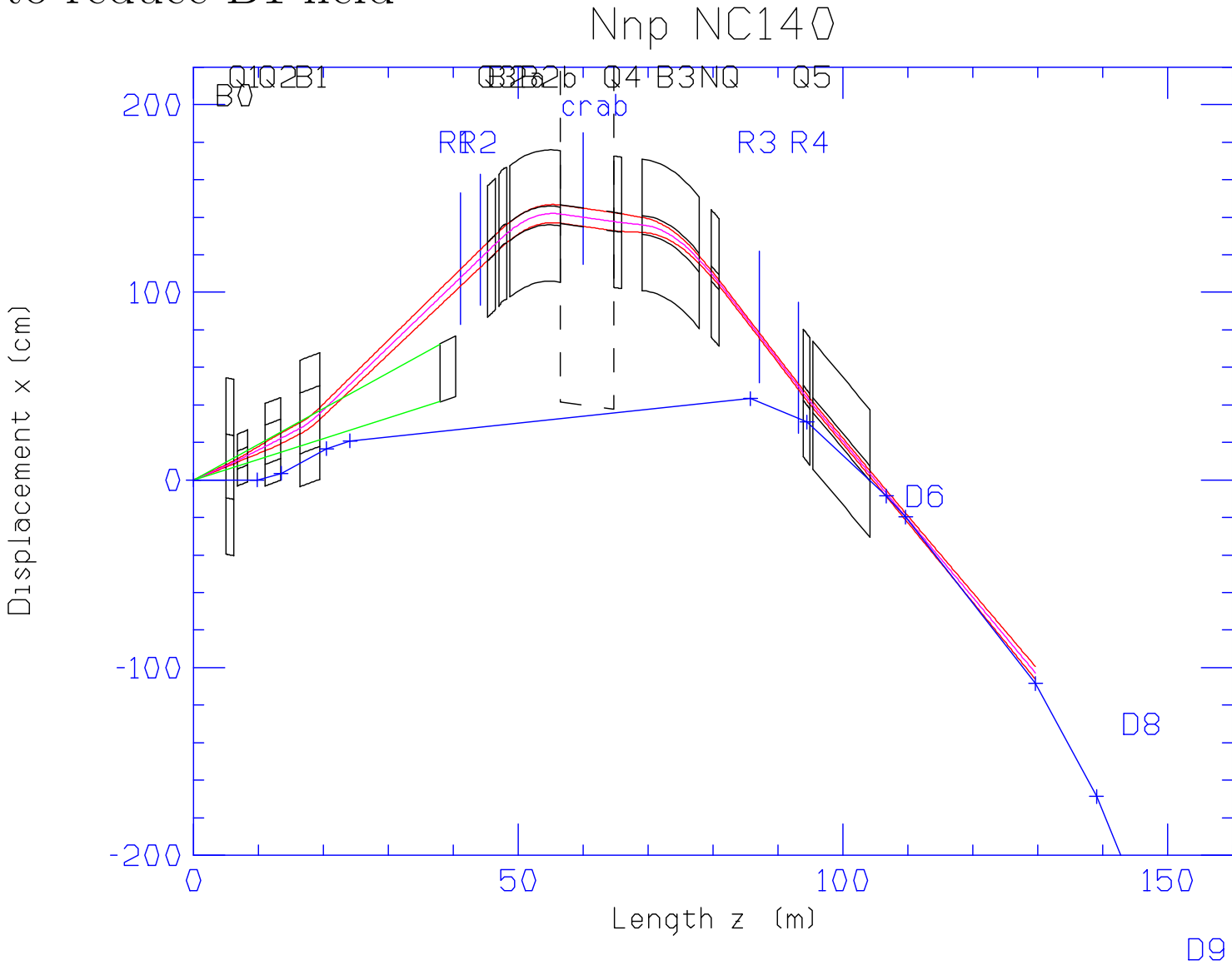
Nnb NC140



Reduces B2 and B3 fields, more space on sides, match before D6

# Move neutron detector back

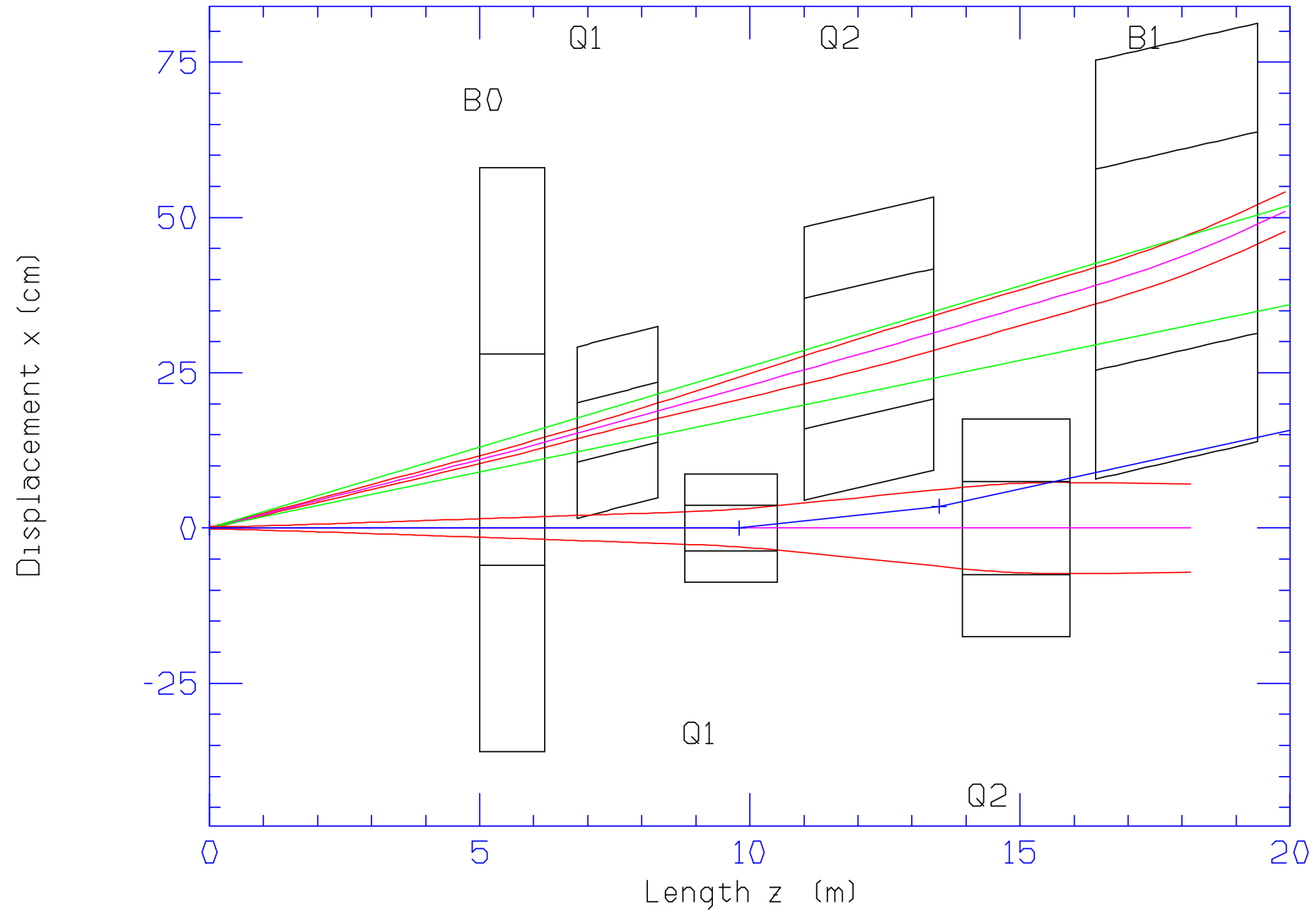
to reduce B1 field



# Detail

Including lowering Q1 to reduce deflection from off-center

Nnb NC140



# New Magnets for 275 GeV

		L1	DL	gap	x	$\theta$	IR	OR	B	Grad)
		m	m	m	cm	mrاد	cm	cm	T	T/m
B0	3	5.00	1.20	0.60	7.5	-7.00	17.00	47.0	1.696	0.000
Q1	5	6.80	1.50	2.70	10.6	15.00	4.80	13.8	6.689	-139.346
Q2	7	11.00	2.40	3.00	18.8	13.00	10.50	22.0	4.761	45.340
B1	9	16.40	3.00	25.90	30.1	13.00	16.20	33.7	4.574	0.000
Q3	11	45.30	1.20	0.50	121.8	33.39	5.00	35.0	0.493	9.854
B2a	13	47.00	1.20	0.50	127.4	32.21	5.10	35.1	-3.694	0.000
B2b	15	48.70	7.80	8.20	132.5	10.00	5.00	35.0	-3.896	0.000
Q4	17	64.70	1.20	3.20	137.6	-4.89	5.00	35.0	1.782	35.648
B3	19	69.10	8.80	1.80	135.8	-23.00	5.00	35.0	-3.662	0.000
NQ	21	79.70	1.20	13.00	110.0	-38.93	4.00	34.0	2.933	-73.333
Q5	23	93.90	1.00	0.50	46.3	-45.23	4.00	34.0	2.200	55.000
H1	25	95.40	8.75	25.50	39.8	-41.63	4.00	34.0	0.000	0.000

- These are for 7 mrad rotation
- B0 field 1T at low E, 1.7 T for higher
- B1 field will be higher for fixed 1.4 T B0

	thetax	L(m)	cenx(cm)	ceny	topx(cm)	botx	topy(cm)	boty	betax(m)	betay	magc(cm)	top(cm)	bot(cm)
B0( 3 )	0.0000	5.0	0.00	0.00	0.66	-0.66	1.90	-1.90	0.66	1.90	0.00	17.00	-17.00
gap	2.2200	6.2	0.13	0.00	0.95	-0.69	2.36	-2.36	0.82	2.36			
Q1( 5 )	2.2200	6.8	0.27	0.00	1.16	-0.63	2.59	-2.59	0.90	2.59	0.40	5.20	-4.40
gap	2.2910	8.3	0.60	0.00	1.86	-0.66	2.70	-2.70	1.26	2.70			
Q2( 7 )	2.2910	11.0	1.21	0.00	3.47	-1.04	2.05	-2.05	2.26	2.05	2.25	12.75	-8.25
gap	3.4221	13.4	1.90	0.00	4.69	-0.88	1.74	-1.74	2.79	1.74			
B1( 9 )	3.4221	16.4	2.93	0.00	5.91	-0.04	1.68	-1.68	2.97	1.68	5.50	21.70	-10.70
gap	18.3922	19.4	6.21	0.00	9.37	3.05	1.62	-1.62	3.16	1.62			
Q3( 11 )	18.3922	45.3	53.85	0.00	58.62	49.07	1.09	-1.09	4.78	1.09	53.82	58.82	48.82
gap	18.1032	46.5	56.04	0.00	60.86	51.22	1.08	-1.08	4.82	1.08			
B2a( 13 )	18.1032	47.0	56.95	0.00	61.76	52.13	1.07	-1.07	4.82	1.07	56.92	62.02	51.82
gap	13.2671	48.2	58.83	0.00	63.64	54.01	1.07	-1.07	4.82	1.07			
B2b( 15 )	13.2671	48.7	59.49	0.00	64.31	54.67	1.06	-1.06	4.82	1.06	59.46	64.46	54.46
gap	-19.8830	56.5	56.90	0.00	61.72	52.08	1.02	-1.02	4.82	1.02			
Q4( 17 )	-19.8830	64.7	40.60	0.00	45.42	35.77	0.97	-0.97	4.83	0.97	40.55	45.55	35.55
gap	-18.7921	65.9	38.25	0.00	42.95	33.56	0.99	-0.99	4.69	0.99			
B3( 19 )	-18.7921	69.1	32.24	0.00	36.22	28.26	1.12	-1.12	3.98	1.12	32.20	37.20	27.20
gap	-53.9482	77.9	0.23	0.00	2.25	-1.80	1.47	-1.47	2.02	1.47			
NQ( 21 )	-53.9482	79.7	-9.48	0.00	-7.86	-11.11	1.55	-1.55	1.62	1.55	-9.51	-5.51	-13.51
gap	-60.2223	80.9	-16.21	0.00	-14.76	-17.65	1.51	-1.51	1.44	1.51			
Q5( 23 )	-60.2223	93.9	-94.50	0.00	-94.03	-94.97	0.12	-0.12	0.47	0.12	-94.54	-90.54	-98.54
gap	-56.6322	94.9	-100.40	0.00	-100.01	-100.79	0.06	-0.06	0.39	0.06			
H1( 25 )	-56.6322	95.4	-103.23	0.00	-102.89	-103.58	0.08	-0.08	0.35	0.08	-103.27	-99.27	-107.27
gap	-56.6322	104.1	-152.78	0.00	-152.18	-153.38	0.96	-0.96	0.60	0.96			

# To be Done

- Have Steve try rotating electron IR
- Overlay electron IR
- Struggle to match displaced quads Q1, Q2 to MADX
- Do the actual hadron match to ring
- Decide whether B0 is fixed or variable
- Get parameters for other cases: HA, LD, with cooling