

# Injector Upgrade: Matching with existing QW magnets

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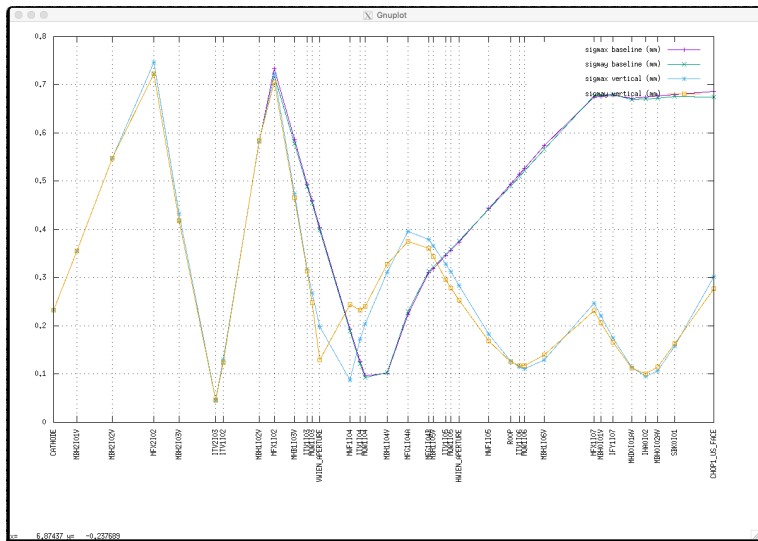
February 17, 2020

Injector Upgrade Modeling Meeting

- ▶ Show that matching for various Vertical Wien and Flipper Solenoid configurations is possible for 200keV using the existing QW quads.
- ▶ The computed optics are not perfect, but good enough to show that we can match with the existing quads.
- ▶ The focusing strengths required of the QWs are within their present capacities.
- ▶ Will do the same exercise using the thin doublets and triplets for completeness.
- ▶ HWien configurations have yet to be explored.

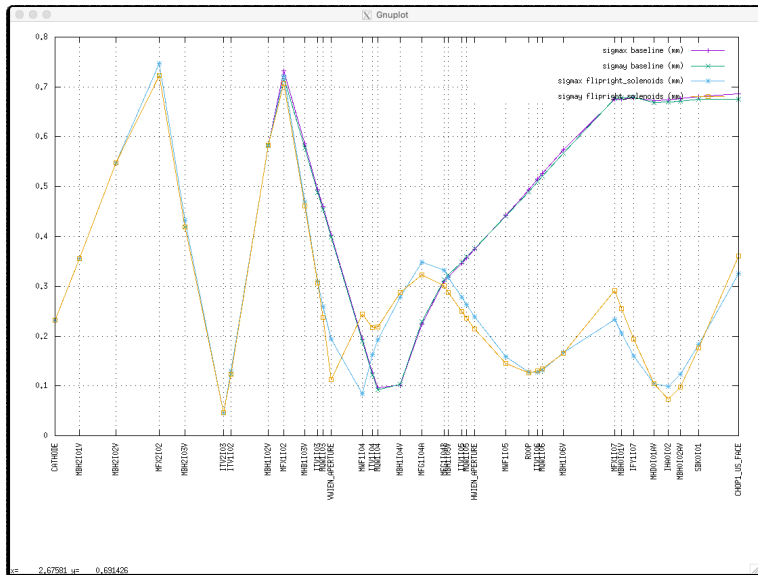
## Vertical Polarization

VWIEN = +90, MFG1I04A = +1296 G-cm, MFG1I04B = -1296 G-cm, HWIEN = 0



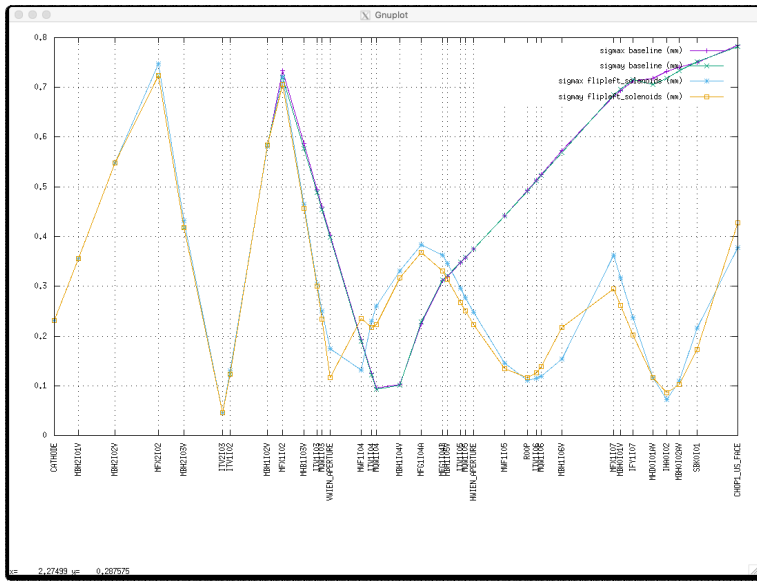
## Flip Right with Solenoids

VWIEN = +90, MFG1I04A = +1296 G-cm, MFG1I04B = +1296 G-cm, HWIEN = 0



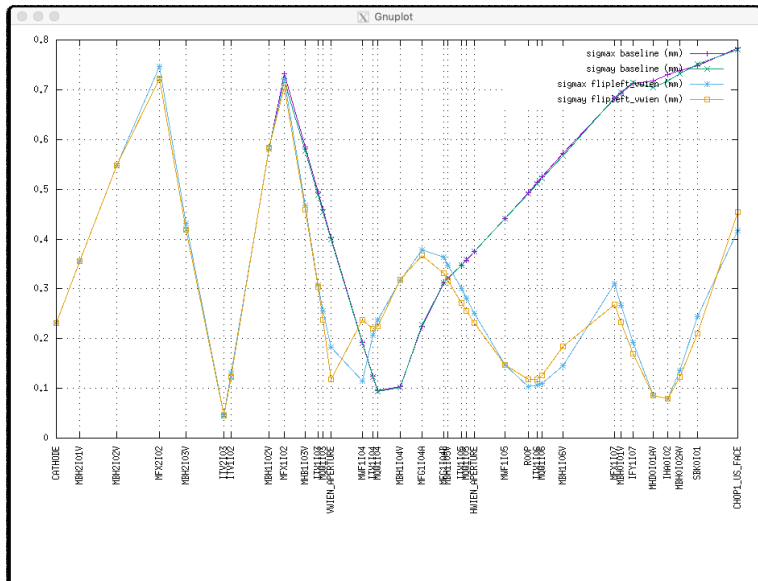
## Flip Left with Solenoids

VWIEN = +90, MFG1I04A = -1296 G-cm, MFG1I04B = -1296 G-cm, HWIEN = 0



## Flip Left with VWIEN

VWIEN = -90, MFG1I04A = +1296 G-cm, MFG1I04B = +1296 G-cm, HWIEN = 0



# Magnet setpoints for each configuration

CASE	COMMENT	VWIEN (deg)	MFG1I04A (T)	MFG1I04B (T)	HWIEN (deg)	MFX1I02 (T)	MQW1I03 (K1)	MQW1I04 (K1)	MQW1I05 (K1)	MQW1I06 (K1)	MFX1I07 (T)	MFA0I03 (T)
1 Baseline		0	8.68E-03	-8.68E-03	0	2.46E-02	-0.452	-0.812	-0.166	6.82E-03	-5.61E-03	3.27E-04
2 Vertical Polarization		90	8.68E-03	-8.68E-03	0	2.76E-02	-23.11	40.85	39.5	30.89	-1.67E-02	-1.17E-02
3 Flip-right (w/ solenoids)		90	8.68E-03	8.68E-03	0	2.77E-02	-27.96	49.14	0.578	-3.26	-1.65E-02	1.07E-02
4 Flip-left (w/ solenoids)		90	-8.68E-03	-8.68E-03	0	2.78E-02	-20.51	51.61	-0.203	19.1	-1.68E-02	1.09E-02
5 Flip-right (w/ ywien)	same as 3											
6 Flip-left (w/ ywien)		-90	8.68E-03	8.68E-03	0	2.77E-02	-22.23	50.39	1.76	19.07	-1.75E-02	1.07E-02
LIMITS (+/-)						2.28E-01	54	54	54	54	3.94E-02	3.50E-02