

Discussion Items

Baseline FF optics

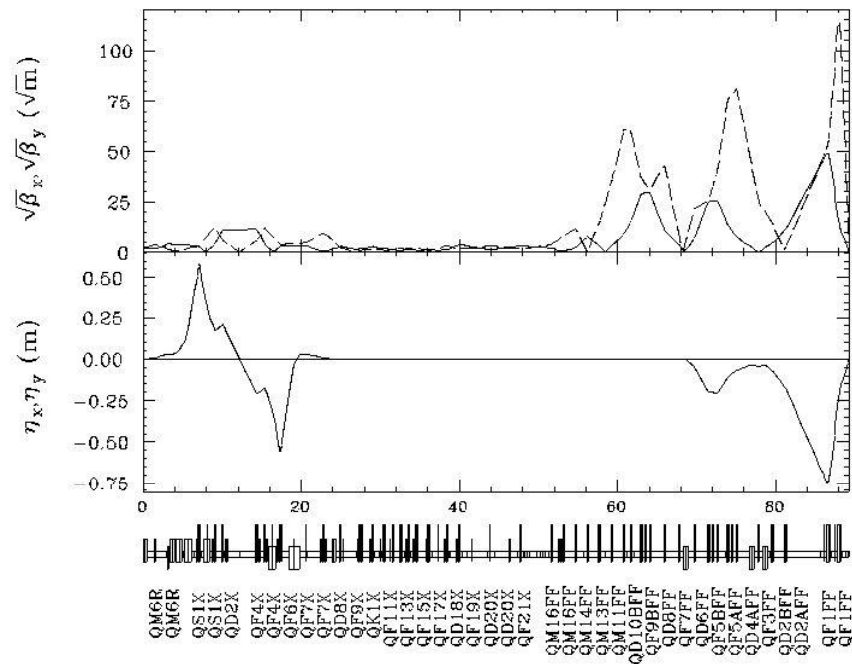
We used the following 3 type of FF optics in this coupled years, however, we'd better have a consensus of the baseline FF optics in this JPY.

- Nominal optics.
- Edu's low betax optics at QF1FF.
- Glen's small QEA multipole contribution optics.

Edu's FFS optics

I recommend to use the Edu's FFS optics for

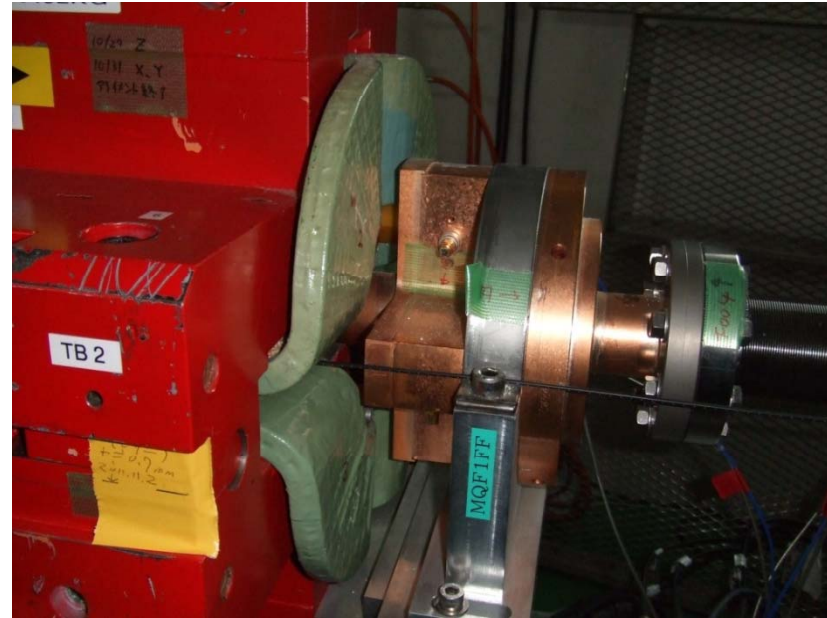
- Small effect of multipole error of QF1FF (2/3 of betax to nominal)
- Cross checked by Dou Wang
- Tested in 2010 December operation



Magnetic Material around Final Doublet



Connector of cooling water
(magnetic material)



Feed through of S-band BPM
(Kovar)

Magnetic Field

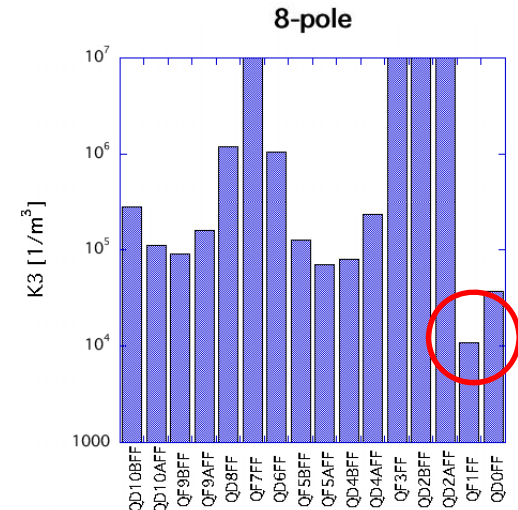
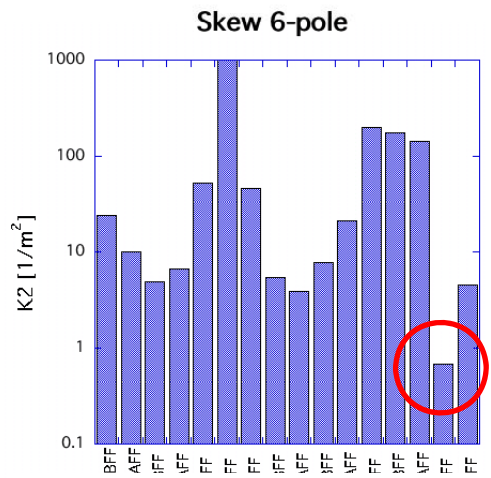
QF1FF 150-200Gauss

QD0FF 300-350Gauss

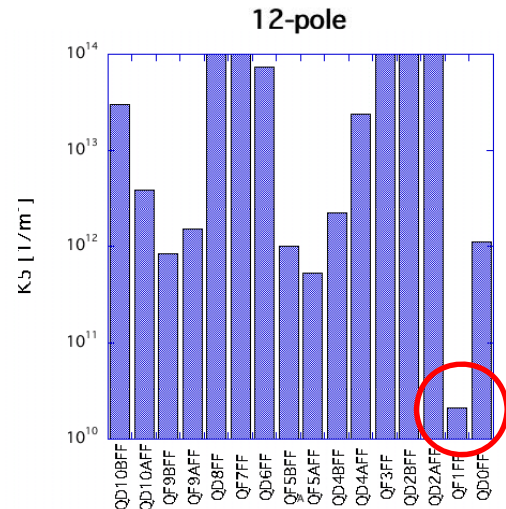
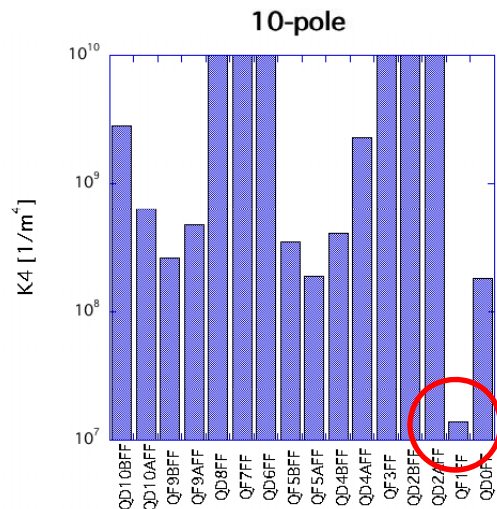
There is a possibility to make a multipole error for these component,
but there component was not changed from 2010.

The sensitivity of the multipole fields

The amount of the multi-pole fields to increase the vertical beam size to 300nm for the beam with 1nm horizontal emittance and 10pm vertical emittance



QF1FF is the most sensitive for all of the multi-pole fields.



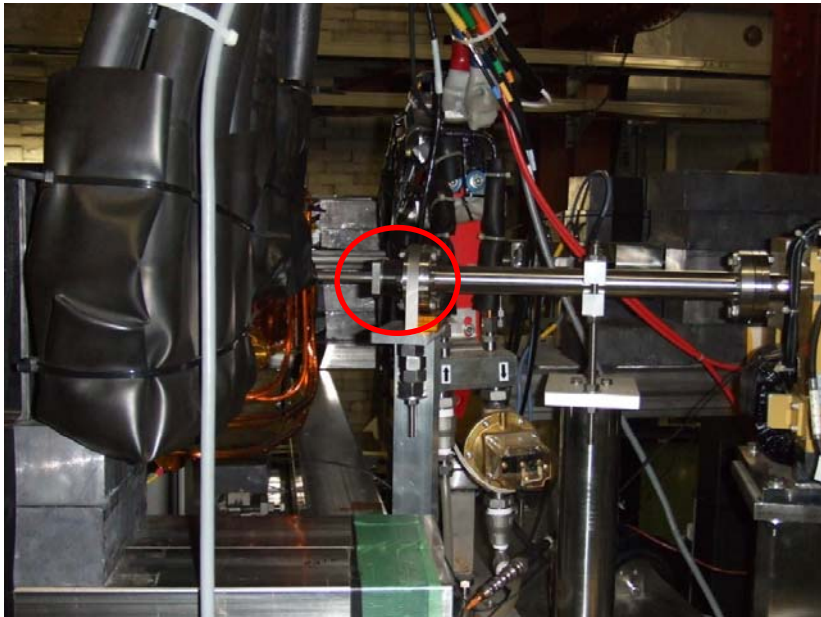
QD0FF is comparable to the other FF quads.

backup

After the earthquake,
the beam emittance in extraction line was *huge* (*~50pm after coupling correction*).
the beam emittance in extraction line has *large intensity dependence*.

Large wake source ??

At the exit of septum magnet



Candidate

Septum beam pipe is 7mm vertical gap.

Beam pipe is 24mm diameter.

$R_{34}(BS3Xexit,IP) = -0.04$ for 10x10 optics

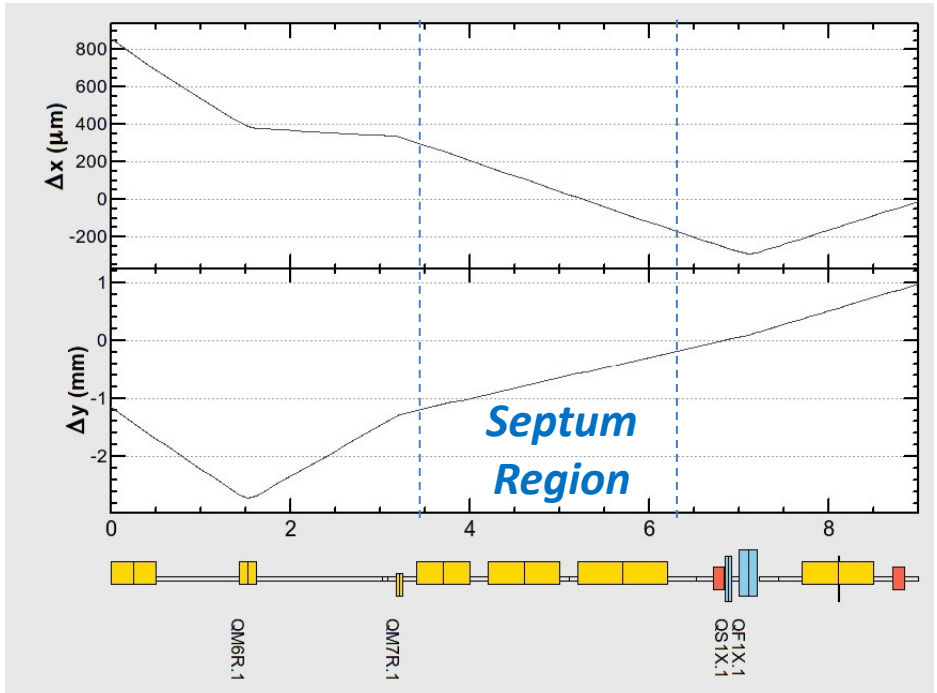
25urad(30kV) kick corresponds to 1um at IP.

Other Sources??

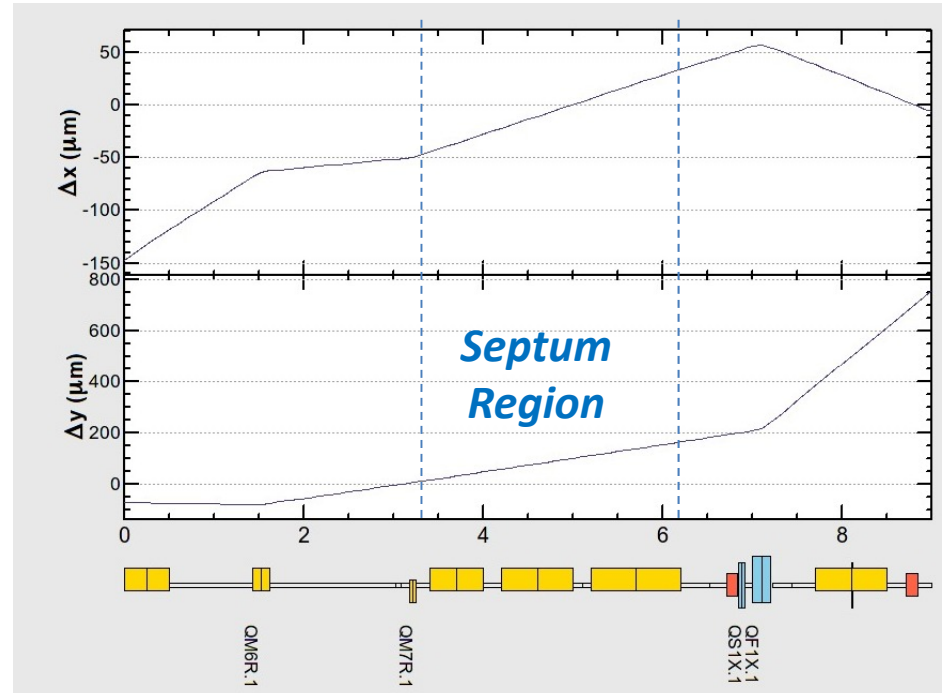
After the earthquake,
-the extraction line was realign and the vertical level was 0.5mm changed
with respect to the septum magnets.

Beam Orbit around Extraction Septum in 2011 December

Before Correction



After Correction



Orbit difference

BS1X entrance
BS3X exit

	H	V
BS1X entrance	0.4mm	1.0mm
BS3X exit	0.2mm	0.3mm