IR Optics with New QCS doublet

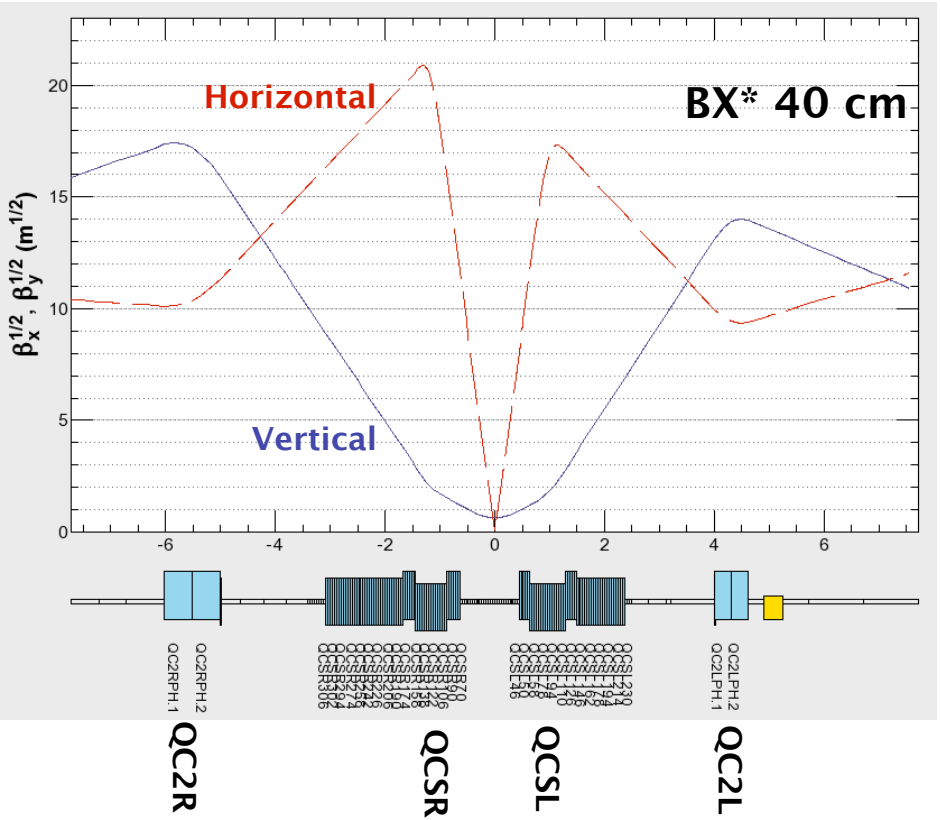
Preliminary Design

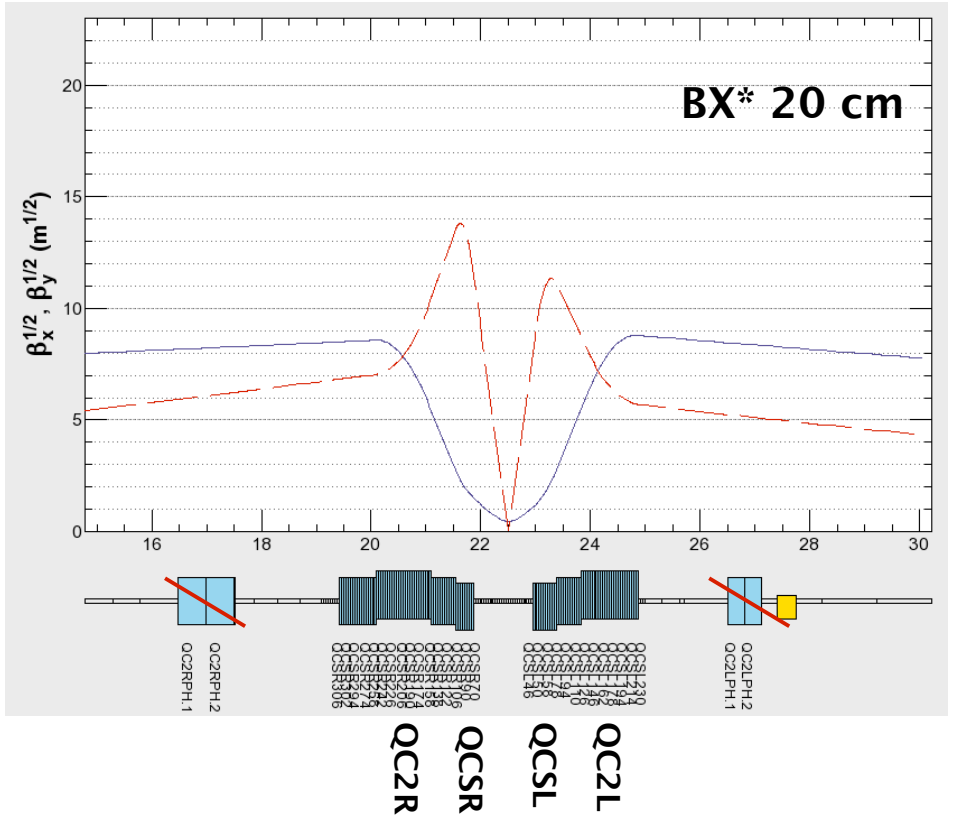
2008.12.11

H. Koiso

QCS doublet

Preliminary

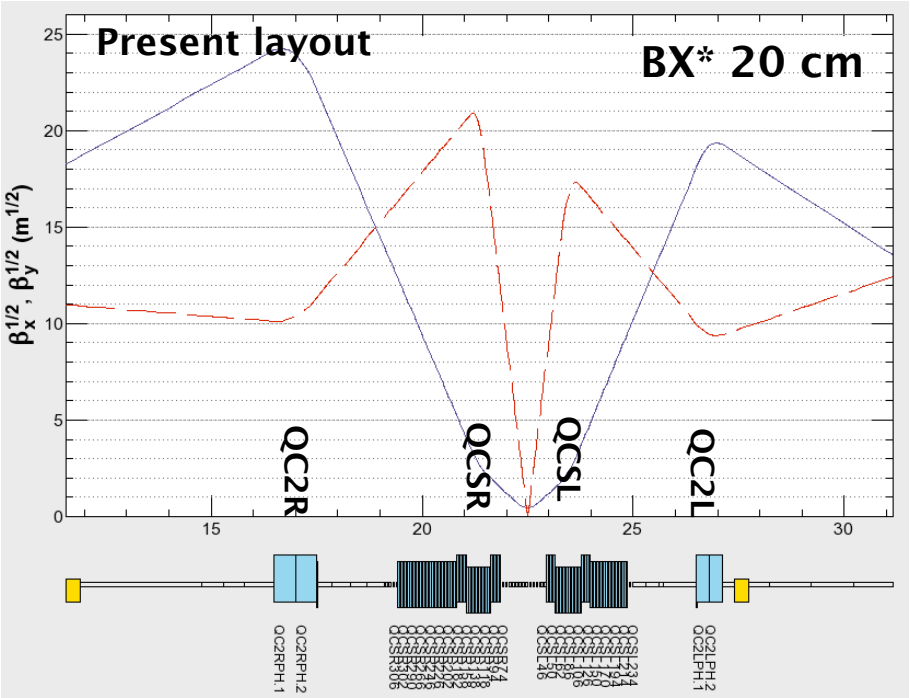


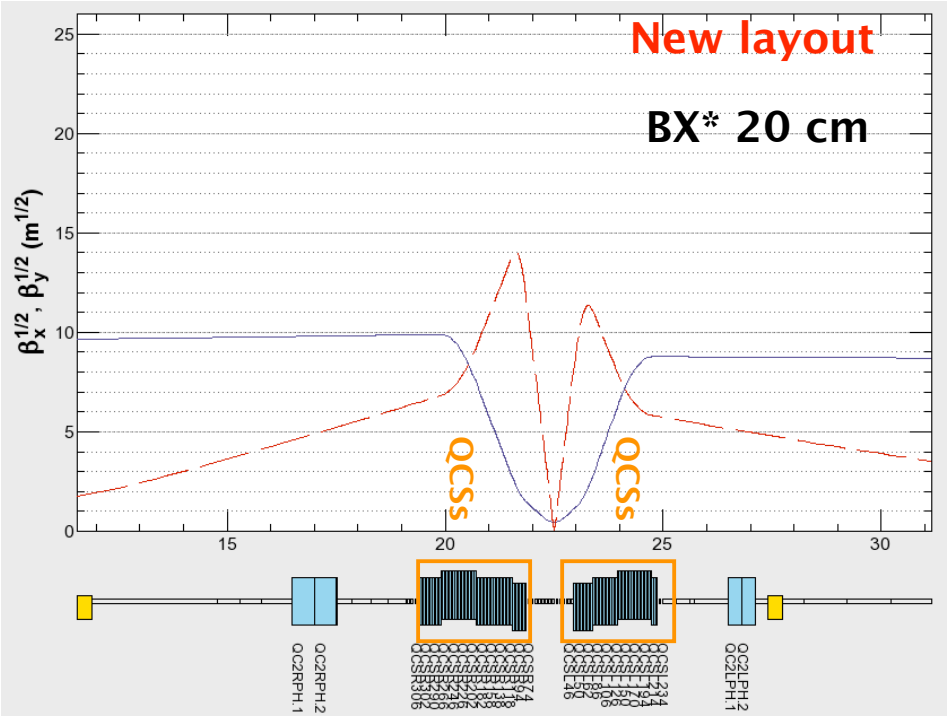


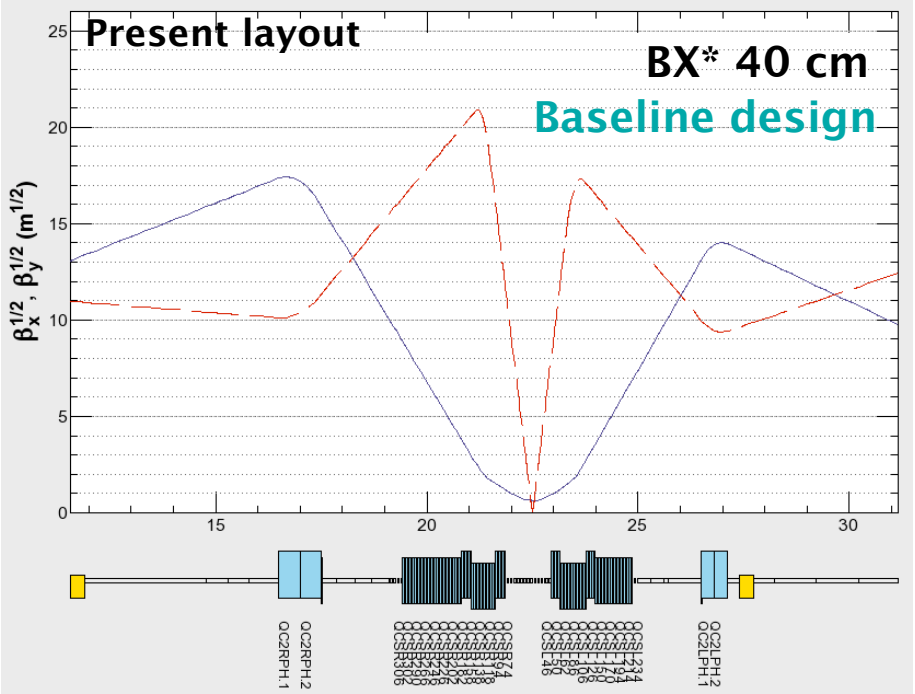
New QCSs (1.9°K operation)

Moved QCSs closer to IP
QCSR 1.16 -> 0.80 m, QCSL 0.969 -> 0.66 m

Squeezed BX* 40 -> 20 cm







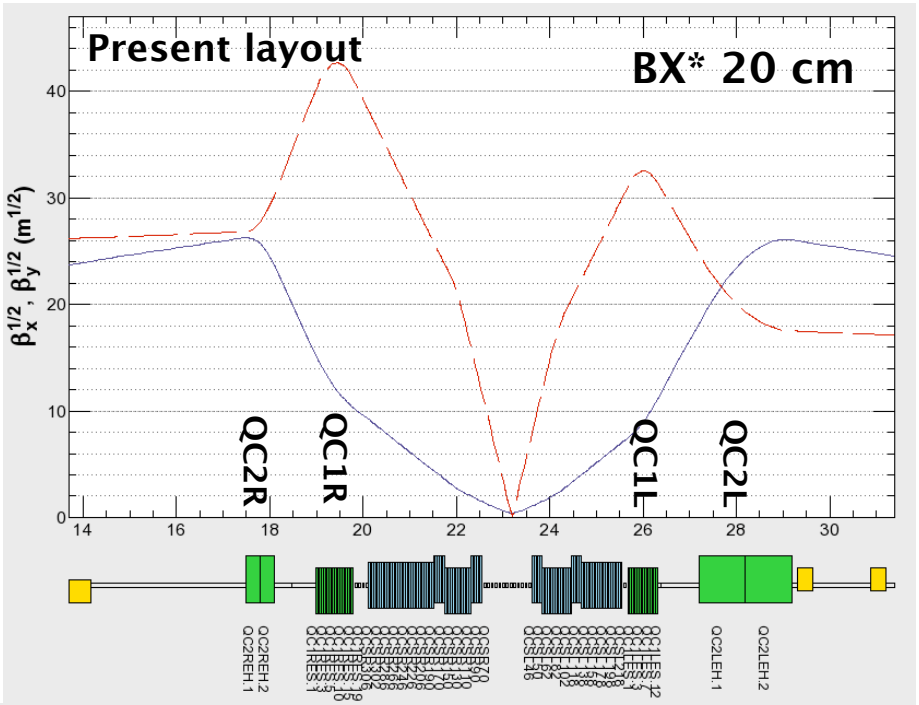
LER IR

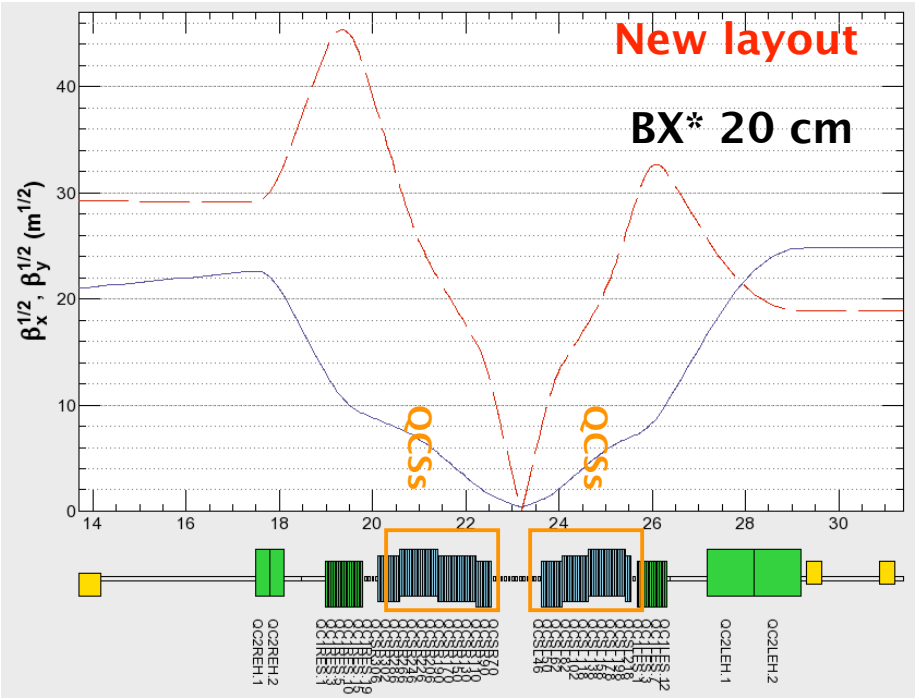
New IR:

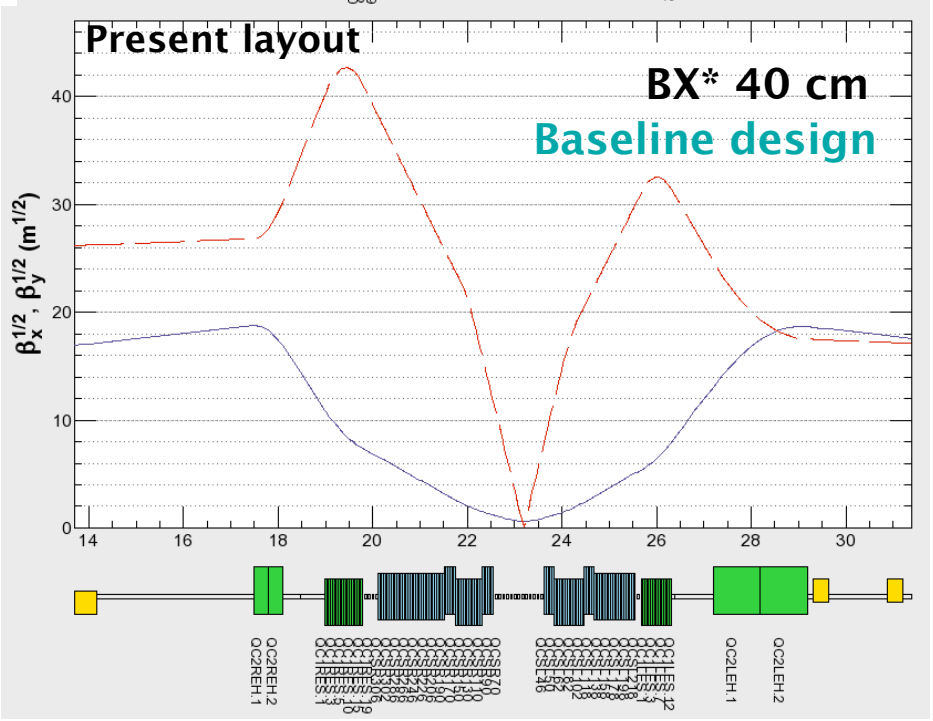
QCS doublet
vertical and horizontal focusing

Both horizontal and vertical sizes become much smaller.

Can be squeezed BX* 40 -> 20 cm







HER IR

QC1s and QC2s are at the same locations.

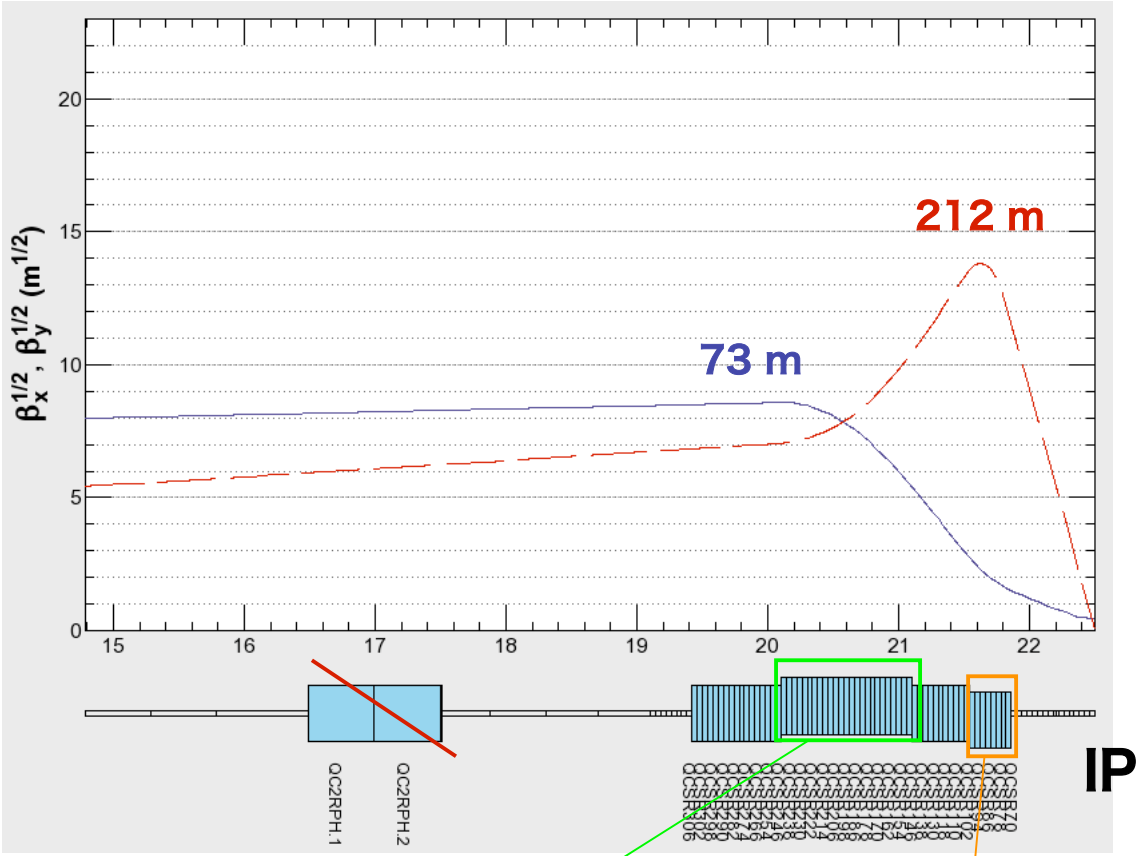
Horizontal size is a little smaller @ QC2
Vertical size is a little larger @ QC1

No clear merit.

Need more optimization.

Backup

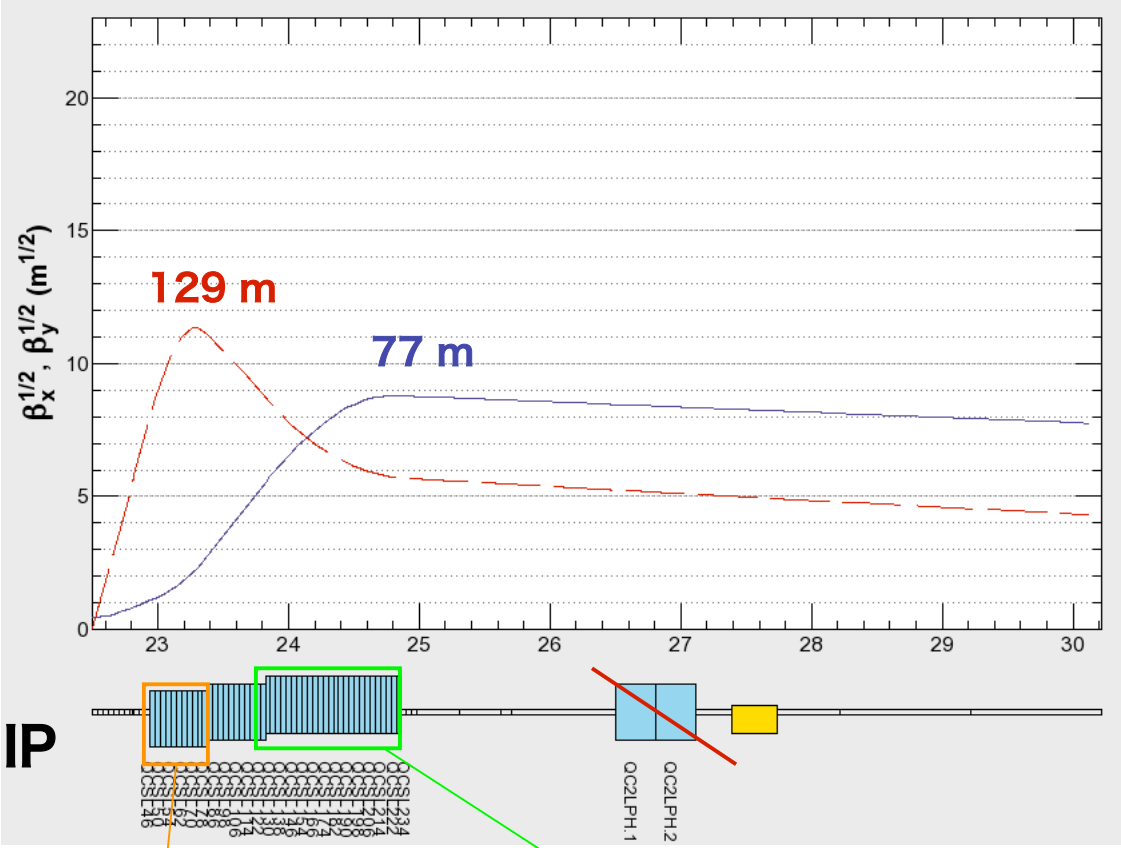
LER New IR (R)



QC2R
Field gradient 9.574 T/m
Distance (IP-Mag. center) 1.90 m
Effective length 1.0 m

QCSR
Field gradient 69.32 T/m
Distance (IP-Mag. center) 0.8 m
Effective length 0.32 m

LER New IR (L)



QCSL
Field gradient 61.04 T/m
Distance (IP-Mag. center) 0.66 m
Effective length 0.44 m

QC2R
Field gradient 9.237 T/m
Distance (IP-Mag. center) 1.84 m
Effective length 1.04 m