



PSB Upgrade
LIU Project

Quadrupoles trims for 2 GeV operation – Tunes @ extraction

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LIU-PSB meeting 19/01/2016



Input from A. Newborough

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LIU-PSB meeting 5/11/2015

Future Situation going to 2 GeV
(With laminated side plates on the BHZ outer gaps)

Current Profiles Modified plates on Outer

Magnet / Circuit	Integrated Field / Gradient	MPS or TRIM Current
Bending Outer	1.824 Tm	5350 A
Bending Inner	1.824 Tm	5280 A
QF	6.758 T/m	Bending Outer -446 A
QD	-6.841 T/m	Bending Inner -290 A
INJ/EXT Outer	1.824 Tm	Bending Outer +75 A
INJ/EXT Inner	1.824 Tm	Bending Inner + 18 A

Magnets for the PSBooster upgrade A. Newborough 5th November 2015

Magnet / Circuit	2.0 GeV [Margin 5.6 kA + 5%] Integrated Field / Gradient	2.0 GeV MPS or TRIM Current [Margin 5.6kA + 5%]
Bending Outer	1.824 Tm [1.893 Tm]	5350 A [5572 A]
Bending Inner	1.824 Tm [1.893 Tm]	5280 A [5487 A]
QF	6.758 T/m [6.716 <> 7.060 T/m]	Bending Outer -446 A [-718 <> -469 A]
QD	-6.841 T/m [-6.799 <> -7.15 T/m]	Bending Inner -290 A [-540 <> -284 A]

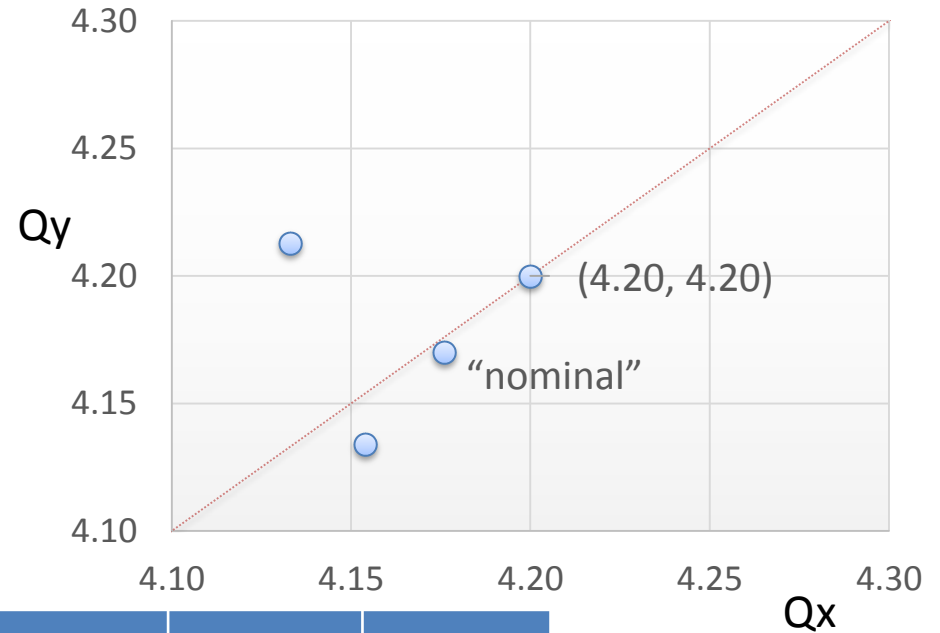
A. Newborough, 13/11/15



Tunes @ 2 GeV extraction

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- Going to higher tunes is always possible:
→ smaller current in the Trims
- There is good margin provided that we keep a similar working point as of today.



	QF gradient (T/m)	QD gradient (T/m)	Qx	Qy
"nominal" for dimensioning	6.758	-6.841	4.18	4.17
Margin (5.6kA+5%)	6.716	-6.799	4.15	4.13
QF nominal + QD margin	6.758	-6.799	4.20	4.09
QF margin + QD nominal	6.716	-6.841	4.13	4.21
WP = (4.20, 4.20)	6.800	-6.879	4.20	4.20
WP = (4.19, 4.19)	6.783	-6.865	4.19	4.19
Zero Trim (max tune)	7.060	-7.150	4.33	4.45



A small post-it...

*Need to update the Q editor to
take into account new MPS:
inner/outer coils will be powered
independently*