

First Results from the Crossing angle scans in MD3.

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Outline

IRNL - first
results

E.H .Maclean

Recap

40cm

60cm IP1

1 Recap

2 40cm results

3 60cm IP1

Recap:

IRNL - first results

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Recap

40cm

60cm IP1

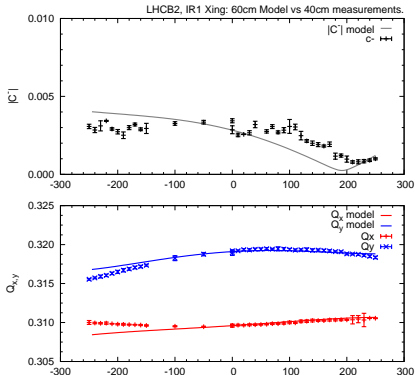
- We scan the crossing angle and examine the feeddown to tune and coupling from the higher order errors in the IPs

Table: Feed down to ΔQ & ΔC of higher order multipoles.

	b_3	a_3	b_4	a_4	b_5	a_5	b_6
H bump	ΔQ	ΔC	ΔQ	ΔC	ΔQ	ΔC	ΔQ
V bump	ΔC	ΔQ	ΔQ	ΔC	ΔC	ΔQ	ΔQ

- We performed several scans:
 - 40cm: Virgin measurements of IP1 Xing
 - 60cm: IP1 xing with 'nominal' a3b3 correction
 - 60cm: IP1 xing with 'nominal' a3b3b4 correction
 - 60cm: Virgin measurements of IP5 Xing
 - 60cm: IP5 xing with 'nominal' a3b3 correction
- 'nominal' → calculated from FiDel tables of measured magnetic errors
- Xing planes in IP1 and IP5 are vertical and horizontal respectively.

40cm Results



- Assumed 90° phase of f_{1001} at IP3 and matched magnitude to the $|C^-|$ at $0\mu\text{rad}$.
- Expect some deviation between 40 and 60cm case - need the new lattice to say whether this explains differences seen.

Figure: IP1: 40cm measurements vs 60cm model.

- Good data for B2, B1 data is poorer on the opposite side from nominal, need to examine ways to improve.
- Compared to 60cm model above while waiting on thin 40cm lattice.

60cm IP1

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40cm

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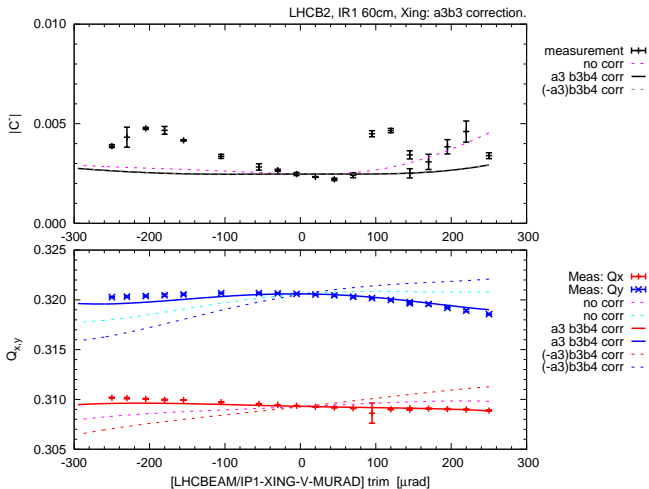


Figure: IP1 B2 a3b3 correction

60cm IP1

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40cm

60cm IP1

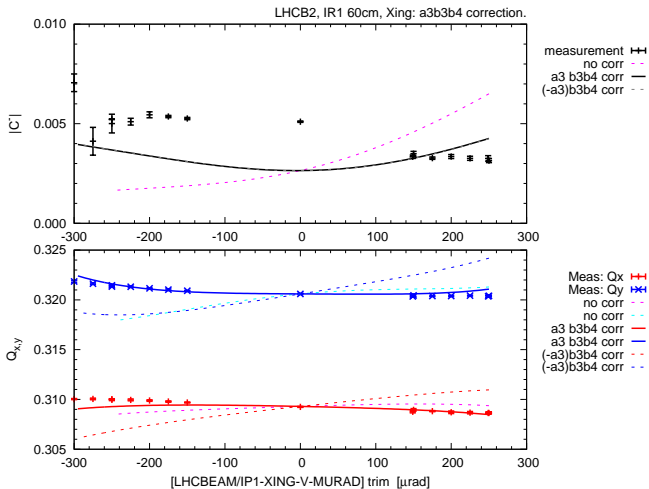


Figure: IP1 B2 a3b3b4 correction.

60cm IP1

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60cm IP1

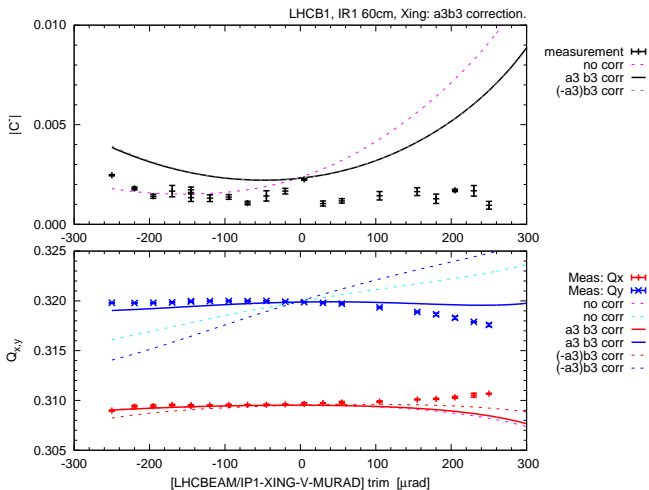


Figure: IP1 B1 a3b3 correction

60cm IP1

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40cm

60cm IP1

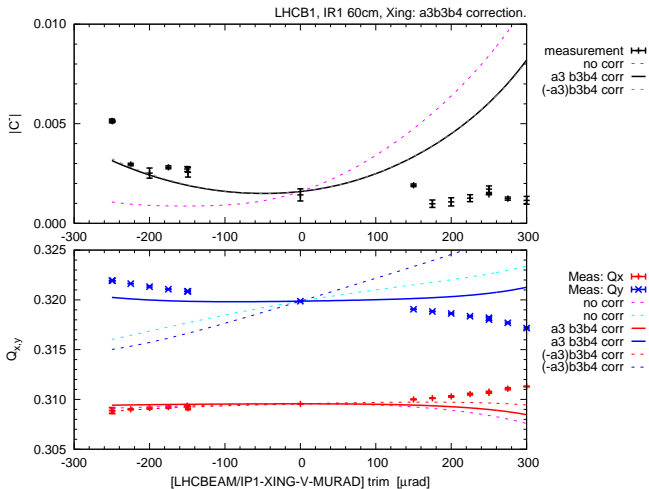


Figure: IP1 B1 a3b3b4 correction.

60cm IP1

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40cm

60cm IP1

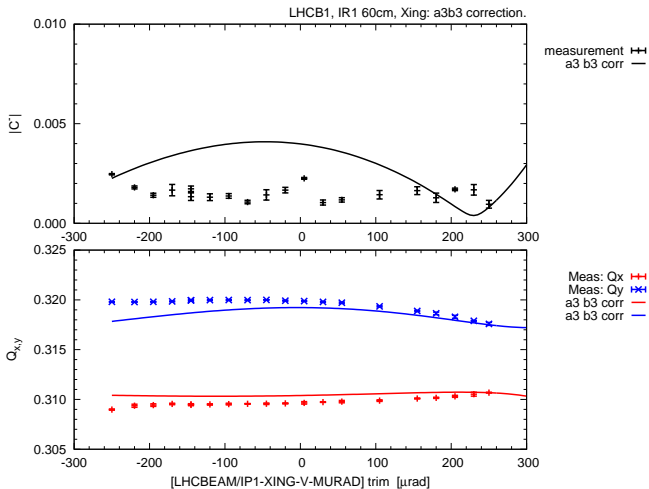


Figure: IP1 B1 a3b3 correction matching at 250 μ rad.