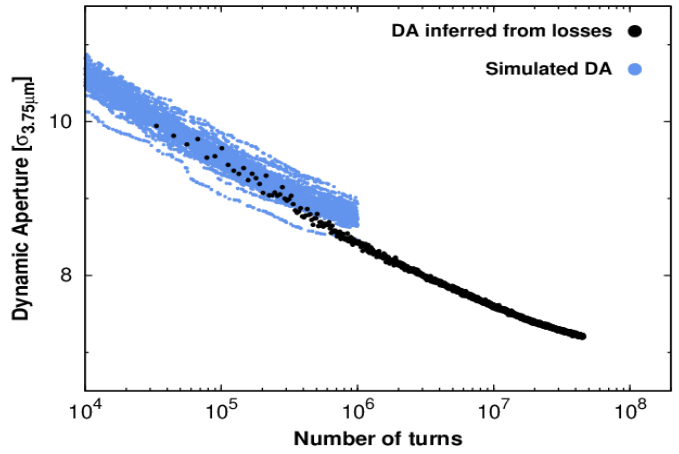
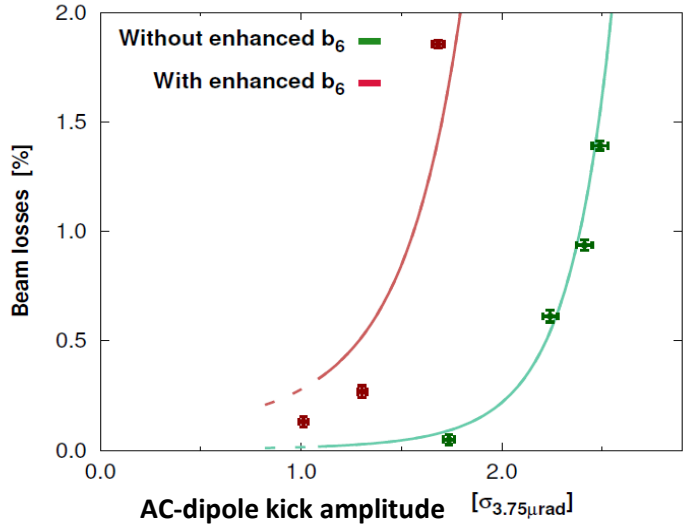
Exploring prospects for beam-based study of dodecapole errors in HL-LHC

Direct DA measurements

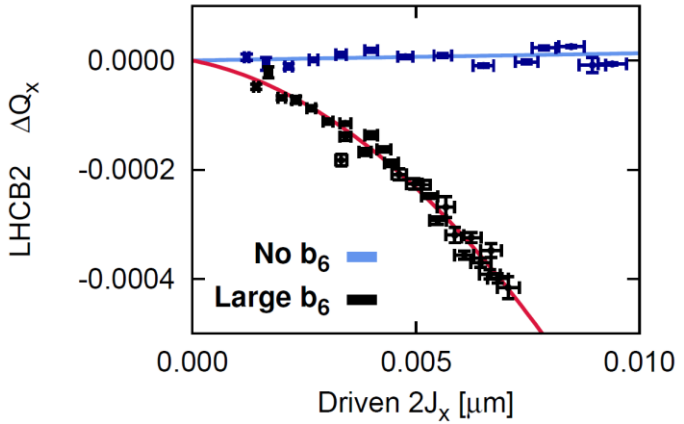
b6 errors representative of HL-LHC @ 15cm gave measurable shifts to free & forced DA





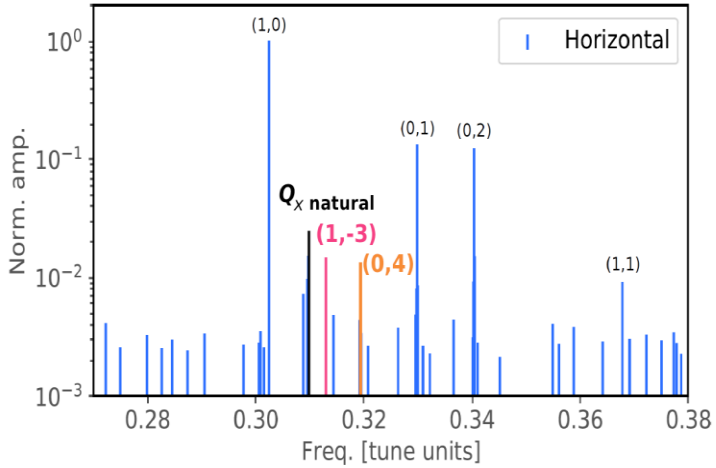
Detuning-based techniques

Second-order detuning with ACD achieved for values expected in HL-LHC @ 15cm



RDT-based techniques

expected feed-down to a4,a5,b5 RDTs comparable to measured values in LHC



Extrapolating measurement quality for feed-down to detuning, to crossing-angle scans in HL-LHC, suggests detuning feed-down can be viable observable from 40cm