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- Need to be able to reliably measure Twiss parameters
- For now, don't care what they are (upstream = black box), first make sure method is consistent
- α , β , ϵ upstream of quads are a property of the beam only and must be the same regardless of the combination of quads being varied to measure them
- They are not, so we don't understand the lattice and cannot hope to measure anything



Observations: Only one quad on at a time, nominal settings otherwise





Observations: Same measurement, but minimal corrector strengths (red)





- $\cdot\,$ Correctors have a huge impact on all measured Twiss parameters
- \cdot Not just artifact of measurement, also real problem for the beam
- Can be combination of dispersion and multipoles
 - Test with elevated $\frac{\Delta p}{p}$ suggests dispersion contributes (not shown today)
 - However, ELEGANT suggests it cannot be enough to explain the inconsistencies
- Measurement in *y* without any correctors is decent albeit not 100 % perfect, why not?
- Cannot test this in x because strong steering is needed for beam transmission
- Beam line realignment possible on the fly?

