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Impact of two-dimensional decoherence on the measurement of resonance driving terms

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In the presence of a tune spread induced by chromaticity or amplitude detuning, decoherence will lead to the damping of the beam centroid motion after a single transverse excitation. This in turn has implications for the analysis of turn-by-turn based optics measurements, as it affects the precision of the spectral analysis. In the past, it has been shown how the effect of decoherence on spectral lines in a single plane can be accounted for. In this paper, this work will be extended to include the effect from both transverse planes. The derivations are then applied on data taken at the IOTA ring at FNAL to study resonance driving terms.

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Footnotes

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Yes

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