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Derivation and interpretation of parameters describing betatron mismatch and chromaticity

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Expressions to quantify betatron mismatch and chromatic effects are frequently used in accelerator physics, but their derivations are not given in standard text books, making their interpretation difficult. First parameters describing betatron mismatch are introduced using normalization with respect to reference Twiss parameters describing a lattice. In a second step, the derivatives of these mismatch parameters with respect to the relative momentum offset are considered and lead naturally to the Montague W functions and a phase angle computed as well by standard lattice programs.

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Footnotes

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Yes

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