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Effect of SCU long range errors on the FEL performance

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The FEL performance strongly correlates with the undulator field quality. The definition of mechanical tolerances for the undulator magnets allows us to achieve the wished field quality. These mechanical tolerances should be defined both on short and long-range errors. With long-range errors, we address problems like deformations of the yoke caused by the support structures or unwanted tapering, which can arise in the positioning procedure of the parallel undulator coils. In this contribution, we quantify the effect and set tolerances of a few types of long-range errors on the FEL radiation generated specifically from superconducting undulator coils.

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Footnotes

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