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Optics corrections and performance improvements in the Bessy II Booster

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The Bessy II Booster is a fast-ramping synchrotron which has been reliably delivering beam to the BII storage ring for several decades. As part of an effort to improve understanding and control of beam dynamics in the Booster, new instrumentation, including a turn-by-turn beam position measurement system, has recently been installed and commissioned. These instrumentation upgrades have allowed for measurement and correction of optics parameters throughout the acceleration ramp, and an understanding of mechanisms of beam loss and instabilities, which was not previously possible. Here we describe the beam position measurement system and present the results of corrections to the orbit, tune, and chromaticity throughout the acceleration ramp, and the resulting improvements to the top-up operation of Bessy II.

Footnotes

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