

Diagnostics and beam dynamics in the Bessy II Booster Synchrotron Meghan McAteer, Terry Atkinson, Günther Rehm, Markus Ries, Andreas Schälicke

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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. Recently, new instrumentation has been installed and commissioned, including a bunch-by-bunch feedback system and a turn-by-turn beam position measurement system. These upgrades allow for further improvements in the performance of the machine, as well as measurement and control of beam dynamics parameters to an extent that was not previously possible with the available instrumentation. Here we discuss some considerations for beam control and diagnostics which are specific to fast-ramping machines, and we present the results of various beam dynamics measurements and corrections in the Booster, such as controlling the closed orbit distortion, transverse and longitudinal tunes, and chromaticity throughout the acceleration ramp.