

**A State Variable Approach to the BESSY-II Local
Beam Position Feedback-System ***

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BESSY (Berlin, Germany) - At the BESSY II facility, the electron beam position and angle near the insertion devices (ID) will vary from the optimum closed orbit (e.g., due to ground motion). This unwanted broadband beam-jitter decreases the electron (and resultant photon) beam's effective brightness. Therefore, feedback techniques will be used to reduce this jitter. Operating over a frequency range of <1- to 100-Hz, a local feedback system will correct these beam-position errors using the 4-bump method around each ID. This paper reviews how the state-variable feedback and control approach can be applied to real-time correction of these beam-position and -angle errors. Frequency- and time-domain simulations showing beam jitter reduction will be presented. Finally, this paper reports results of a beam-feedback test at BESSY I.

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