Status of Digital Orbit Feedback for SPEAR[*],
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The global orbit feedback system for SPEAR presently adjusts the electron beam position at 30 beam position monitors (BPMs) with a cycle time of approximately 1 min. In addition, fast analogue servo systems maintain vertical beam position at 10 beamline photon monitors with a 30 Hz bandwidth using localized orbital bumps. The global and local servos will soon be merged into a single unified system operating from a VME-based DSP board with ancillary interface modules. The goal is to acquire orbits, process the data, and update corrector setpoints at millisecond intervals to provide a closed-loop system bandwidth of 50 Hz or more. In this paper, we report on our approach to structure data flow between the BPM processor and the VME crate and SPEAR computers, our method of managing orbit corrector control from both computers, the DSP orbit correction algorithms, and other features of the software architecture designed to optimize system flexibility.