

CLOSED-LOOP POSITION CONTROL OF BEAM ORBIT IN DUKE UNIVERSITY FREE-ELECTRON LASER FACILITY

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This paper discusses a feedback control mechanism for stabilizing the position of electron beam in Duke University Storage-Ring Free-Electron Laser Facility. The feedback correction scheme is achieved by static output feedback of Beam Position Monitor (BPM) readouts. The output feedback matrix consists of a slowly time varying term and a fast term to enhance robustness. The slowly time-varying component minimizes the orbit error in a damped least-squares sense. Experimental evaluation of the performance of the closed-loop system is currently under way by using EPICS software on a VME-based platform.