THE ESRF FAST POSITIONAL GLOBAL FEEDBACK

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ESRF is a 3rd generation synchrotron radiation source based on a 6 GeVstorage ring. It is optimised to produce radiation in the X ray range usinginsertion devices. X ray beam size and divergence at the source points arein the micrometer and micro radian range. A fast global feedback system hasbeen implemented on the ESRF storage ring in order to correct the verticalclosed orbit distortion caused by fast perturbations like mechanicalvibration of the magnets. This feedback uses 16 BPMs (beam positionmonitors) and 16 dipoles correctors magnets and apply corrections at a 4.4KHz rate. It achieves a damping of 6dB of an initial orbit distortion of 2micrometer rms, in the .1 to 200Hz frequency range. We will present themain guidelines followed for the design of the feedback system and thetechnical choices made. We will discuss the optimisation of the control ofsuch a system and compare its specific requirements to the requirements ofothers beam orbit diagnostics and orbit control systems also implemented atESRF.