

Beam Based Calibration of BPM Position Sensitivity at Spring-8 Storage Ring

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Abstract

A method for beam based calibration of BPM position sensitivity is proposed, and preliminary result at Spring-8 Storage Ring is presented. Beam based alignments of the BPM offsets were performed in various accelerator facilities. We extended this kind of beam based alignment techniques to calibrate the position sensitivity of the BPM. When the strength of one quadrupole magnet is changed slightly, a certain amount of extra COD arises, depending how much the offset from the quadrupole center COD has, before changing the quadrupole strength. The amplitude of COD and the distance from the quadrupole center has a certain functional relation, which is defined by the quadrupole magnet field distribution and the storage ring optics parameters. By comparing the COD amplitude and the BPM position reading, we can re-scale the position sensitivity of the BPM. Recently, a preliminary test of the method was performed. In this paper the obtained result are presented.