

Offset calibration for single pass BPM

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We present a calibration method for the single pass (SP) BPM using pulsed RF signals. It enables the offset calibration of BPMs necessary to accomplish the beam first turn prior to the start of accelerator commissioning. One of the major factors of the offset is the gain imbalance between BPM channels by uneven characteristics of signal cables and readout electronics. Signal reflections in the cables at bent parts and connectors affect the gain imbalance depending on the measuring mode. In the COD measurement with narrow-bandwidth signal detection, standing waves in the cables caused by reflections impact on the gain balance. The offset calibration using CW RF signals at the detection frequency is necessary in this case. The SP trajectory measurement, however, detects pulsed signals. The delayed signals due to reflections are masked by setting adequate time windows of the readout. The reflections in the cables have smaller effects than the COD measurement. We present here the offset calibration method of SP BPM by pulsed RF signals and the experimental results including the comparisons with results by CW signals.

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