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Bunch by bunch feedback systems for KEKB

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Transverse bunch-by-bunch feedback systems for curing coupled-bunch instabilities have been working well since the early stages of the commissioning of the rings. To meet requirements of 90 degrees of phase shift, suppression of the static component and adjustable digital delay, a high-speed digital filter system with two-tap FIR functionality has been developed. Beam diagnostic systems which are part of the bunch feedback systems, such as bunch current monitors, betatron tune measurement systems, and bunch oscillation recorders, have been playing important roles in the tuning and understanding of the rings, enabling stable high-luminosity operation. The performance of these systems is reported here. Recently, a decrease of the luminosity with increase of the vertical feedback gain has been found. Possible explanations, including the stability of the feedback systems and the effect of residual noise, are also discussed.

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