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Evaluating a Fit Method for an Online Orbit-Response-Matrix Model at DELTA

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At DELTA, a 1.5-GeV electron storage ring operated by the TU Dortmund University, preliminary tests of an online orbit-response-matrix model were conducted. Closed orbit perturbations corrected by the slow orbit feedback can be buffered and used to update a fit of the bilinear-exponential model with dispersion (BE+d model). This model is a representation of the orbit-response matrix depending on the beta functions, the betatron phases and the tunes in both planes and an unnormalized dispersion. After a new fitting recipe had been introduced to obtain estimates of the aforementioned quantities, this work focuses on investigating the measurement-over-measurement error of the fitted beta functions. The unnormalized dispersion output is also evaluated. The presented research is based on measurement results.

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