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An Improved Algorithm for Q-scale Analysis in Jitter Decomposition

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High-speed transceivers are the essential component of data acquisition systems for high energy physics (HEP). When the data rate increases to several gigatransfers per second (GT/s), jitter becomes one of the bottlenecks limiting the data transfer rate. Total jitter can be modeled as a superposition of an unbounded random component that follows a Gaussian distribution and a bounded deterministic component. In this work, an improved algorithm is proposed for Q-scale analysis by estimating a parameter values of DJ and selecting a dynamic fitting interval. The validation results indicate that the error between the measured values and theoretical values is less than 5%, which is better than traditional algorithms. At the same time, the algorithm has better measurement stability and higher data utilization.

Minioral

Yes

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No

Are you a student?

Yes

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