

Optics Measurements, Corrections and Modeling for High-Performance Storage Rings



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Light Source Instrumentation

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Third-generation light sources have reached a very mature state of development, with lattice measurement and correction performed routinely at the level of 1% or better. High-resolution beam position monitoring coupled with high-speed data acquisition and processing have made this possible. At x-ray free electron laser facilities such as LCLS, resonant cavity beam position monitors with sub-micron single-shot resolution allow sophisticated beam-based alignment and optics measurement capability. In addition to beam position monitoring, synchrotron light diagnostics provide powerful tools in the determination of emittance, coupling, dispersion, and time structure. An overview of the different diagnostics in use at light sources with an emphasis on application to lattice measurement and correction will be presented.

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