

Drift Observations and Mitigation in LCLS-II RF

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The LCLS-II RF system physically spans ~700m and has strict requirements – on the order of 20 fs – on the phase stability of the accelerating RF fields in its SRF linac.

While each LLRF rack is crudely temperature-stabilized, the weather inside the service building as a whole is usually compared to a tin shack in the California sun. A phase-averaging reference line is the primary system deployed in support of the phase stability goals. There are other, secondary subsystems (SEL phase offset, and determination of cavity detuning) that are also sensitive to RF phase drift.

We present measurements of phase shifts observed in the overall RF system, and how diagnostics are able to sense and correct for them during beam operations.

Keyword

linac, drift

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