

LCLS-II longitudinal beam diagnostics based on a short S-band deflector

Thursday 29 August 2024 16:00 (2 hours)

We designed, built and commissioned a beam diagnostic system based on a short S-band deflector and a commercial klystron transmitter. A two feet long transverse-horizontally deflecting S-band rf structure (STCAV2) is installed the LCLS-II post-laser-heater diagnostic beamline at 100 MeV electron beam energy to measure the absolute electron bunch length and to allow time-resolved beam quality measurements such as vertical slice emittance and slice energy spread. The deflector is designed to produce 0.48 MeV peak kick at 300 kW of input power. The klystron transmitter, which uses a commercial solid-state modulator, is installed in the klystron gallery at the grade level. The low-level RF system is based on ATCA and developed in-house. We will report on the overall performance of the project, which was successfully completed, on May 31, 2024.

Footnotes

Funding Agency

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