

DIAGNOSTICS FOR COMMISSIONING LCLS

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Abstract

The first stage of commissioning of the Linac Coherent Light Source at SLAC has begun in April of this year with successful transport of the beam from the new RF photoinjector through to the first bunch compressor. Construction and installation is continuing and will culminate with first FEL light in 2009. The LCLS provides several diagnostic challenges for providing precision, single-pulse readback of beam size and position in order to tune for very low 1 micron emittances. Ultra-short subpicosecond bunches call for special techniques of bunch length measurement including coherent radiation monitoring and the transverse deflecting cavity. The latter is also used to measure time dependent emittance and energy spread of slices along the bunch, which are critical to the lasing process within the FEL.

**SUBMISSION NOT
RECEIVED**