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Electron Beam Jitter Study for the IRFEL/CDRL

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Electron Beam Jitter Study for the IRFEL/CDRL, * C. KIM,
Lawrence Berkeley Laboratory — A highly stable 50 MeV electron linac
is being studied as a driver of the Infra-Red, Free-Electron Laser for the
proposed Chemical Dynamics Research Laboratory (CDRL)¹ at LBL.
Requirements for the timing, positional, and energy jitter tolerances for
the electron micro-pulses are very stringent. In this paper we present the
results of a numerical simulation study which was carried out to establish
tolerances at the subsystem level. Errors included in the study were:
electron gun voltage, current, and timing errors; phase and amplitude
errors of the rf systems; misalignments of the gun and the focusing
magnets; and temporal fluctuations of the focusing-magnet power
supplies.

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¹"Chemical Dynamics Research Laboratory Conceptual Design
Summary," Lawrence Berkeley Laboratory Report, PUB-5266, April
1990.

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