

Abstract Submitted
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Colliding Pulse Injection Control and X-Ray Sources¹ C.G.R. GEDDES, Y. BALVA, M. BATTAGLIA, M. CHEN, E.H. ESAREY, T.S. KIM, N.H. MATLIS, D.E. MITTELBERGER, K. NAKAMURA, G.R. PLATEAU, L. RABELY, C.B. SCHROEDER, W.P. LEEMANS, LBNL, D.B. THORN, T. STOEHLKER, GSI, D.L. BRUHWILER, E. CORMIER-MICHEL, B. COWAN, J.R. CARY, Tech-X — Reduced beam energy spread, fluctuation, and emittance are important to applications of high gradient laser-plasma wakefield accelerators including Thomson gamma sources and high energy colliders. Experiments and simulations will be presented on control of injection to improve beam quality using the beat between multiple laser pulses to via kick electrons in momentum and phase into the wake accelerating phase. Stable intersection and beam performance over hours are obtained using active pointing control. Dependence on laser and plasma parameters is characterized in coordination with simulations. Electron beam source size and position are measured using betatron X-ray emission produced when electrons oscillate in the focusing field of the wake to improve understanding of beam emittance and stability, also producing a broadband, synchronized fs source of keV X-rays.

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Cameron Geddes
LBNL

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