

Abstract Submitted
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The Focusing and Bunching of an Electron Beam Injected Perpendicular to Plasma Wakefields RONALD WILLIAMS, ARNESTO BOWMAN, Florida A&M University — Recent simulations of a diagnostic electron beam, which propagates across a relativistic plasma wave, show that the beam is bunched in the longitudinal direction and focused in the radial direction, of the plasma wave. The focusing suggests that the plasma wave acts like a cylindrical lens, resulting in a line-focused electron beam. The conditions for focusing, and the characteristics of the focused beam will be presented. The results suggest that the plasma wave might be useful as an energy analyzer for a perpendicularly injected electron beam. The effects of the electromagnetic fields of co-propagating laser beams are included. A summary is presented of the effects on the bunching and focusing due to the electron beam energy, plasma wave amplitude and beatwave combination. Comparisons with newly initiated particle-in-cell simulations will be discussed. This work is sponsored by the Department of Energy, DE-SC0008157.

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