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Interactions of plasma waves and lasers with electron beams resulting in a line focus[1] A.L. BOWMAN, R.L. WILLIAMS, Florida A&M University — An electron beam, injected perpendicularly across co-propagating plasma waves and laser beams, has been shown in numerical trajectory simulations to be focused to a line. The numerical trajectory simulations solve the equation of motion of the electron interacting with the electric fields of a plasma waves and up to two co-propagating laser beams. The combination of these fields appears to have a similar effect on the electron beam as a cylindrical lens. The effects on the focus, due to variations of the electron beam energy, plasma wave amplitude, and laser wavelengths are studied. A PIC code has been modified to model this interaction also. A comparison with other plasma wave focusing schemes is made. An experimental test to observe this focusing has been designed.

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