

Abstract Submitted
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Amplification and acceleration of nonlinear plasma waves by magnetic compression JASON ROCKS, Carnegie Mellon University, PAUL SCHMIT, NATHANIEL FISCH, Princeton Plasma Physics Lab — The effects of magnetic compression on nonlinear electron plasma waves traveling parallel to the background field are studied using novel particle-in-cell simulations. The waves are excited through the application of an amplitude- and frequency-modulated sinusoidal external driver near resonance over a finite period of time. Subsequently, magnetic compression of the plasma results in adiabatic wave amplification and evolution of the nonlinear mode frequency. This effect is observed for adequately slow compression, while faster compression results in particle detrapping and wave degradation. Potential applications and connections to analytic theory will be explored.

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