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Electromagnetic Radiation from Beam Driven Electrostatic Instabilities: Investigation using Computer Simulation[1] S.M. FINNEGAN, West Virginia University, N. BRENNING, Alfven Laboratory, Royal Institute of Technology, M.E. KOEPKE, West Virginia University, I. AXNAS, M.A. RAADU, Alfven Laboratory, Royal Institute of Technology — Two-dimensional, electromagnetic particle-in-cell simulations [J.P. Verboncoeur *et al.*, Comp. Phys. Comm. **87**, 199 (1995)] were used to show, that the interaction of an electron beam, formed from electrons accelerated in a cathode sheath, with the background plasma as it travels into a plasma density gradient produces large-amplitude, high-frequency (HF) electric-field oscillations (close to local plasma frequency) spatially localized in the plasma-density-gradient region. The HF oscillations propagate away from the cathode with phase velocity $5x10^6$ m/s. Half-wavelength, HF standing waves have previously been reported in 1-Dim. simulations [H. Gunell *et al.*, Phys. Rev. Lett. **77**, 5059 (1996)]. We plan to use 2-Dim. simulations to investigate lab-observed correlations between spatially localized, HF standing waves and electromagnetic radiation. We are interested in possible space applications.

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