

Abstract Submitted
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Extraordinary-Mode Radiation Produced by Linear-Mode Conversion of Langmuir Waves EUN-HWA KIM, Princeton University, IVER CAIRNS, PETER ROBINSON, University of Sydney — Linear-mode conversion (LMC) of Langmuir waves to radiation near the plasma frequency at density gradients is important for laboratory, space, and astrophysical phenomena. We study LMC in warm magnetized plasmas using numerical electron fluid simulations when the density gradient is parallel to the ambient magnetic field (B_0). We demonstrate that LMC can produce extraordinary (x) mode as well as ordinary (o) mode radiation from Langmuir waves, contrary to earlier expectations of o -mode only. Equal amounts of o - and x -mode radiation are produced in the unmagnetized limit. The x -mode efficiency decreases as B_0 increases while the o -mode efficiency oscillates due to an interference phenomenon between incoming and reflected Langmuir or z -modes. Both x - and o -mode should be produced for typical coronal and interplanetary parameters, alleviating the long-standing depolarization problem for type III solar radio bursts.

Eun-Hwa Kim
Princeton University

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