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**Dispersion of electrostatic and electromagnetic waves in a relativistically drifting plasma** C.-K. HUANG, M.D. MEYERS, B.J. ALBRIGHT, Los Alamos National Laboratory — Multi-dimensional electron beam-plasma instabilities in the relativistic regime [1] are of interest in a number of scenarios, such as fast ignition for inertial confinement fusion and generation of cosmic gamma ray. A closely related problem arises for drifting plasmas with relativistic electron and ion velocities typically found in laser ion acceleration [2] and also in numerical simulations with the boosted frame technique [3] for plasma wakefield acceleration. We study the dispersion of the electrostatic and electromagnetic waves in such plasma using a linear analysis in the cold-fluid limit and a kinetic approach. Possible instabilities are analyzed and compared with those found in an electron beam-plasma system. The potential implications for the boosted frame simulation technique will also be discussed.

[1] A. Bret et al., *Physics Of Plasmas* 17, 120501 (2010).

[2] L. Yin et al., *Physics Of Plasmas* 14, 056706 (2007).

[3] J.-L. Vay, *Physical Review Letters* 98, 130405 (2007).

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