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Electrostatic dust cyclotron instability in a plasma with warm dust[1] MARLENE ROSENBERG, Dept. of Electrical and Computer Engineering, University of California San Diego — The excitation of electrostatic dust cyclotron (EDC) waves is a possible signature of the presence of magnetized charged dust in a plasma. The EDC instability is driven by ions drifting along the external magnetic field. Using kinetic theory, this instability is examined in a collisional, magnetized plasma containing submicron sized dust grains that have large thermal speeds. Neutral-charged particle collisions and dust-dust collisions are included in the analysis. The critical ion drift for exciting EDC waves is compared with that for exciting dust acoustic waves. Conditions for the excitation of higher harmonic EDC waves are also explored. Application to possible laboratory dusty plasmas immersed in large magnetic fields is discussed.

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