Abstract Submitted
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Internal resonances in dusty plasma[1] ZHIYUE DING, KE QIAO, LORIN MATTHEWS, TRUELL HYDE, Baylor University — This talk will discuss the nonlinear mode coupling and 1:2 internal resonance recently observed experimentally for the first time in a dusty plasma with vertical dust pairs. Analysis of the power spectra density (PSD) and amplitude-frequency response shows the horizontal S2 mode is excited through vertical excitation when a commensurate relationship between the vertical B and the horizontal S2 mode is satisfied at low plasma pressures. A theoretical model describing the vertical dust particle pair under vertical excitation, considering interactions to quadratic terms, will also be provided. For this case, the equations of motions are solved in decoupled coordinates employing a multiple scale method in order to obtain the theoretical amplitude-frequency response at the onset of 1:2 internal resonance. The resulting response curve will be shown to match experimental data

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