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Wave dispersion in a strongly coupled 2D superparamagnetic dusty plasma P. HARTMANN, Z. DONKO, Wigner Research Centre for Physics, Budapest, Hungary, M. ROSENBERG, University of California, San Diego, G.J. KALMAN, Boston College — Dusty plasmas are plasmas containing fine charged solid particulates, or dust grains. Typically, the dust grains interact via a screened Coulomb (Yukawa) interaction, where the screening of the dust charge is due to the background plasma. Here, we consider a two-dimensional (2D) dusty plasma composed of charged superparamagnetic dust which is immersed in a magnetic field **B** whose magnitude and direction can be varied. In this case, the dust grains thus interact via both Yukawa and magnetic dipole-dipole interactions. Because the induced magnetic dipole moments of the grains lie along **B**, the interaction between the grains becomes anisotropic as **B** is tilted with respect to the layer. This poster considers wave dispersion in the strongly coupled liquid phase of this system. The analysis is confined to magnetic tilt angles such that the interaction remains repulsive in the dust layer and corresponds to a stable equilibrium. The theoretical approach uses a reformulated Quasi-Localized Charge approximation that can treat dipole interactions, combined with molecular dynamics simulations. The mode dispersion relations are found to depend on the relative strengths of the Yukawa and dipole-dipole interactions and the direction of wave propagation in the layer.

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