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Normal Modes and Mode Coupling in a Dust Cluster KE QIAO, JIE KONG, ZHUANHAO ZHANG, LORIN MATTHEWS, TRUELL HYDE, CASPER - Baylor University — Mode couplings in complex plasma crystals have recently received attention both theoretically [1] and experimentally [2, 3]. In this research, the normal modes for a cluster consisting of 3-10 dust particles within a complex plasma are investigated employing a molecular dynamic (MD) simulation. The ion wakefield downstream from each particle and the particle's charge variation as it relates to the particle's location in the plasma are examined independently. The resultant coupling and corresponding resonances between modes will also be discussed and compared to experiment.

- [1] V. V. Yaroshenko, A. V. Ivlev, and G. E. Morfill, Phys. Rev. E 71, 046405 (2005).
- [2] L. Couedel et al., Phys. Rev. Lett. 104, 195001 (2010).
- [3] Bin Liu, J. Goree, and Yan Feng, Phys. Rev. Lett. 105, 085004 (2010).

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