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Mode coupling and resonance instabilities in a horizontal finite dust chain KE QIAO, JIE KONG, ZHUANHAO ZHANG, LORIN MATTHEWS, TRUELL HYDE, CASPER - Baylor University — Mode couplings and resonance instabilities in plasma crystals have recently received increased attention both theoretically and experimentally. The ion wakefield downstream of the dust particles created by the vertical ion flow within the sheath has been shown to be the main cause of this mode coupling. In this research, the normal modes are investigated for a horizontal finite chain consisting of 3-10 dust particles in a complex plasma, employing a molecular dynamic (MD) simulation. Considering the ion wakefield downstream of each particle, the resultant mode coupling and resonance instabilities are analyzed and compared to experimental results from the CASPER lab.

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