

Abstract Submitted
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The effect of mechanical vibration on the dust particle kinetic temperature measurement¹ JIE KONG, KE QIAO, LORIN MATTHEWS, TRUPELL HYDE, CASPER - Baylor University — An important parameter in governing the self-assembly of structures in a complex (dusty) plasma is the coupling parameter Γ , the ratio of the electrostatic energy of the charged dust to the dust thermal energy. In a GEC rf reference cell, the dust thermal energy can come from collisions with the neutral gas, fluctuations of the confining electric field or changes in the charge on the dust particle itself. Experimentally, the kinetic energy of the dust can be determined using the Gaussian thermal velocity probability distribution. However, recent measurements of the dust particle velocity probability distribution function have shown that external mechanical vibrations of the plasma chamber can have a significant effect on the result. This investigation compares measurements of the dust kinetic temperature with and without external vibrations to the GEC cell.

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