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Charge fluctuations of particles on surfaces exposed to plasma
T.E. SHERIDAN, Ohio Northern University — A stochastic model for charge fluctuations on a microscopic dust particle resting on a surface exposed to plasma is presented. We assume that the ion flux to the particle is independent of its potential, while the electron flux depends on potential through the Boltzmann relation. The standard deviation of the particle charge is found to scale as $\sqrt{CT_e}$, where C is the particle-surface capacitance and T_e is the plasma electron temperature. The charging time, as found from Monte Carlo calculations, scales linearly with CT_e.

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