Potential of a large dust grain in a collisionless plasma

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***Abstract*—**

The ABR model is a radial motion theory derived by Allen, Boyd and Reynolds. It describes the equilibrium surface potential reached by a dust grain immersed in an infinite and stationary plasma.

Consider a spherical dust grain, of arbitrary size, immersed in this infinite plasma. Far from the surface we assume that the electron and ion densities are equal; known as quasi-neutrality.