

Rutgers University
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Equilibrium distribution of a charge in the presence of an external field

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Abstract

It is well known that the equilibrium distribution of a unit charge on a conductor is characterized by a minimum energy problem. When we consider this distribution in the presence of an external field, a similar characterization exists, going back to Gauss. However, the location of this equilibrium position of charge varies with external field, which makes finding explicit equilibrium distributions difficult even for simple conductors and fields. We shall address the problem when the external field is generated by finitely many point charges.

These problems have surprisingly diverse applications in approximation theory and orthogonal polynomials, combinatorics and number theory, random matrices, etc.

<http://www.math.rutgers.edu/lebowitz/Fall2013seminars.html>