

Abstract Submitted
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Assessing the connection between charge density and local fields

ERIC SHIRLEY, NIST — The dielectric screening of a potential disturbance depends on the electronic charge density. Local-field effects, such as those which generate non-zero off-diagonal matrix elements of the dielectric matrix, are related to Fourier components of the charge density. This talk will review the degree to which one can predict such off-diagonal effects based on the charge density alone. This shall be done within an independent-particle approximation and using model dielectric functions so that the results can be compared. We shall sample a range of metals, semiconductors and insulators.

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