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Effective Coulomb interaction among electrons in cuprates

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Abstract

© 2014, Allerton Press, Inc. Analytical expressions for the charge susceptibility and permittivity of cuprates are obtained using the singlet-correlated conduction band model. The screening parameter caused by interband transitions is refined using experimental plasmon frequencies. A new branch of acoustic plasmons is predicted. The range of values in which acoustic plasmons do not experience Landau damping is determined for wave vectors in the Brillouin zone. Fourier images of the effective Coulomb interaction among charge carriers is calculated for different wave vectors.

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