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Microscopic Model of the Nonlocal Response of Metamaterial Plasmonic Structures II ALEXANDER SHVONSKI, KRZYSZTOF KEMPA, Boston College — Nonlocal effects are generally omitted in typical approaches to calculating the electromagnetic response of metamaterial plasmonic structures. In some situations, however, where the electron momenta far exceed those of photons, nonlocal corrections are essential. In this work, we calculate the nonlocal plasmonic response of a microscopic model of a metamaterial plasmonic structure by employing the random phase approximation, and the self-consistent ground Lang-Kohn states. We compare our results with experiment, and various simple models, including the hydrodynamic approximation.

Alexander Shvonski
Boston College

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