

Abstract Submitted
for the MAR17 Meeting of
The American Physical Society

Modeling non-locality of plasmonic excitations with a fictitious film JIANTAO KONG, ALEXANDER SHVONSKI, KRZYSZTOF KEMPA, Boston College — Non-local effects, requiring a wavevector (q) dependent dielectric response are becoming increasingly important in studies of plasmonic and metamaterial structures. The phenomenological hydrodynamic approximation (HDA) is the simplest, and most often used model, but it often fails. We show that the d -function formalism [1], exact to first order in q , is a powerful and simple-to-use alternative. Recently, we developed a mapping of the d -function formalism into a purely local fictitious film [2]. This geometric mapping allows for non-local extensions of any local calculation scheme, including FDTD. We demonstrate here, that such mapped FDTD simulation of metallic nanoclusters agrees very well with various experiments. [1] P. J. Feibelman, *Progress in Surface Science* 12, 287 (1982); A. Liebsch, *Physical Review B* 48, 11317 (1993). [2] A. J. Shvonski, J. Kong and K. Kempa, *Physical Review B* (*in review*).

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Date submitted: 20 Nov 2016

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