

Abstract Submitted
for the MAS20 Meeting of
The American Physical Society

Modeling surface electronic profile in plasmonic excitations by an effective film approach JIANTAO KONG, Rutgers University, Camden — Classical macroscopic Maxwell equations with conventional boundary conditions at material interfaces are not sufficient when describing surface plasmons with very short wavelengths. Especially, when size of the system approaches nanometer range or below, the non-abrupt surface electronic profile would be important or dominant. The spilled-out free electrons effectively form a film on the surface of metal. We show that this film could be properly modeled with a dielectric function [1], utilizing Feibelman's d-function formalism [2]. This method can be easily implemented in computational electrodynamics numerical packages, with quantum mechanical surface plasmonic effects covered, exact to first order. References: [1] Kong, Shvonski and Kempa, Physical Review B 97, 165423 [2] Feibelman, Progress in Surface Science 12, 287

Jiantao Kong
Rutgers University, Camden

Date submitted: 02 Nov 2020

Electronic form version 1.4