

Rigorous modal analysis of metallic nanowire chains

Amit Hochman and Yehuda Leviatan

Department of Electrical Engineering

Technion - Israel Institute of Technology, Haifa 32000, Israel

leviatan@ee.technion.ac.il

Abstract: Nanowire chains (NCs) are analyzed by use of a rigorous, full-wave, Source-Model Technique (SMT). The technique employs a proper periodic Green's function which converges regardless of whether the structure is lossless or lossy. By use of this Green's function, it is possible to determine the complex propagation constants of the NC modes directly and accurately, as solutions of a dispersion equation. To demonstrate the method, dispersion curves and mode profiles for a few NCs are calculated.

© 2009 Optical Society of America

OCIS codes: (050.1755) Computational electromagnetic methods, (050.6624) Subwavelength structures, (230.7370) Waveguides, (240.6680) Surface plasmons.