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Plasmonic nanowire transmision lines YUN PENG, KRIS KEMPA, Physics Department, Boston College — Metallic nanowires could be used as nano-optical transmission lines. The important factors characterizing such lines are the subwavelength operation, long propagation length, and low penetration of the propagating modes into the environment outside wires. In this work we study these factors in silver nanowires operating as surface plasmon polariton (SPP) waveguides, by employing the finite difference time domain (FDTD) and the finite difference frequency domain (FDFD) simulations. In addition to the dispersion relation of the SPP mode, we investigate the inter-wire crosstalk, an important feature of the nano-optical circuits. We compare our results with the available experimental results.

Yun Peng
Physics Department, Boston College

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