Abstract Submitted
for the GEC18 Meeting of
The American Physical Society

Investigation of tunable Dirac cones and flat bands in two dimensional plasma photonic crystals[1] BENJAMIN WANG, Stanford Univ, JESSE A. RODRIGUEZ, Stanford University, MARK CAPPELLI, Stanford Univ — We present finite difference time domain (FDTD) simulations of the response of a two-dimensional plasma photonic crystal to incident TE electromagnetic waves that span regions both above and below the plasma frequency, ω_p and investigate the Dirac cone dispersion with double degeneracy near both Γ and X symmetry points. Additionally, flat bands due to surface plasmon modes are investigated at frequencies below the plasma frequency. Experimentally, the transmission properties are characterized for a 7 by 7 2D plasma photonics crystal, with spatial E field mapping and transmission measurements completed on the test crystal.

[1]This work was supported in part by a Multidisciplinary University Research Initiative from the Air Force Office of Scientific Research. B.W. was also supported in part by a National Defense Science and Engineering Graduate Fellowship.

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Date submitted: 07 Aug 2018 Electronic form version 1.4