Abstract Submitted
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Characterization of a K-Band Plasma Controlled Photonic Crystal[1] DAVID BIGGS, MARK CAPPELLI, Stanford University — The effect of a low-pressure plasma column on a resonant cavity in a miniature photonic crystal is studied experimentally and computationally. The photonic crystal is created using a square array of alumina rods with the center rod removed to create the resonant cavity. Out of plane radiative losses are minimized by a copper waveguide on either side of the photonic crystal. The plasma column is formed by a kHz discharge in argon gas at <1 Torr. The bandgap and defect state properties of the photonic crystal with and without a plasma column are measured using a vector network analyzer. The time resolved history of the plasma discharge is measured with a crystal detector. The experiments are compared with simulations using a finite difference time domain electromagnetic solver and a simple Drude model of the plasma column.

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