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A study of a split ring resonator response to free-space Ku band excitation in the presence of a gap plasma discharge[1] JACK GOODWIN, ROBERTO COLON QUINONES, FABIO RIGHETTI, BEN WANG, MARK CAPPELLI, Stanford University — Split-ring resonators are commonly used elements in metamaterials. Their L-C resonance drives a permeability that can take on negative values affording novel interactions with free space radiation. The capacitance is partially dictated by the split ring gap. In this study, we examine both theoretically and experimentally, the electromagnetic response of a split ring resonator, and arrays of resonators, to incident Ku band radiation under conditions in which a gas discharge or laser-produced plasma is generated in proximity of the gap. The resonance is found to shift towards higher frequencies, consistent with what is expected from simple theoretical modeling.

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