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Dielectric Effects in Electro-optic Field Sensors ANTHONY GARZARELLA, DONG HO WU, Naval Research Lab, RANDALL HINTON, Temple University — The use of electro-optic (EO) crystals for electromagnetic field detection is an attractive alternative to conventional techniques, due to their compactness, large intrinsic bandwidth, and ability to measure field amplitude and phase with minimum field perturbation. In our $LiNbO_3$ sensors, anomalously large detection sensitivities were observed, which were found to be due to dielectric relaxation effects within the crystals. In this presentation, we demonstrate these effects, their impact on the EO sensor responsivity, and discuss implications for improving future EO field sensors.

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