Abstracts

Field-tunable probe for combined electric and magnetic field measurements

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A method to measure the magnitude and phase of electric and magnetic fields with a single probe is presented. The optically-based probe, consisting of a hybrid combination of gallium arsenide followed by terbium gallium garnet, employs the Pockels effect to measure electric fields and the Faraday effect to measure magnetic fields. Isolation between the two effects is achieved via external polarization optics, allowing the probe to be toggled between electric field and magnetic field sensitivity by switching the input optical polarization between two states. A demonstrated isolation of 22 dB is observed using a shorted microstrip transmission line as a test bed.

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