Abstracts

Demonstration of a wide-band fiber-optic nulling system for array antennas

P.J. Matthews, Pao-Lo Liu, J.B. Medberry, M.Y. Franekl and R.D. Esman. "Demonstration of a wide-band fiber-optic nulling system for array antennas." 1999 Transactions on Microwave Theory and Techniques 47.7 (Jul. 1999, Part II [T-MTT] (Special Issue on Microwave and Millimeter-Wave Photonics)): 1327-1331.

A novel technique for forming and steering squint-free wide-band nulls in the far-field pattern of an ultrawide-band array antenna is presented. The nulling system relies upon a fiber-optic dispersive prism tapped delay-line microwave filter to generate the appropriate nulling waveform. The null-forming architecture was integrated with a wide-band fiber-optic dispersive prism true-time-delay transmit beamformer for demonstration in an anechoic chamber. Measurements show null depths of the order of 15 dB over the 4-18-GHz bandwidth of the system for various steering angles. The demonstrated architecture may be used for simultaneous wide-band beamforming, sidelobe reduction, and jammer suppression.

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