Abstracts

Performance of Ultra-Bandwidth YIG Pulse Compression Networks

W.L. Bongianni, J. Burnsweig and J.H. Polson. "Performance of Ultra-Bandwidth YIG Pulse Compression Networks." 1968 G-MTT International Microwave Symposium Digest and Technical Program 68.1 (1968 [MWSYM]): 301-308.

Advanced radar signal processing techniques for improved target detection in severe clutter environments require large pulse compression bandwidths. The clutter power returned from a ground path is proportional to the illuminating pulsewidth. Narrow pulsewidths, possible with pulse compression without sacrifice in average power, provide an excellent way of improving detectability through reduction of clutter return. Frequency diversity is another technique frequently employed to improve the detectabdlty of targets obscured in a clutter environment. Here, again, employment of an ultra-bandwidth spectrum provides the same effect with the complexity of a frequency diversity transmitter-receiver unit. The effect of the broad band spectrum is to cause the target and the clutter statistics to be altered such that a lower threshold can be set for improving target detections. The ultra-bandwidth performance obtained with the single crystal YIG dispersive delay line places it in the front rank of promising candidates for high resolution applications.

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