Abstracts

Electromagnetic Backscattering Measurements by a Time-Separation Method

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The object of this research is to investigate the feasibility of adapting the conventional pulsed radar technique for closerange back-scattering measurements for obstacles of arbitrary shape and small scattering cross sections. The time-separation or microwave-pulse method described in this paper differs essentially from all previously used laboratory methods in that the scattered field does not mix with the incident field at the detector and is separated from it in time. The essential experimental arrangement of this method is similar to that of the CW magic-T method except that a source generating very short pulses is used instead of CW. Preliminary experimental data for thin circular metallic disks show that the pulse method is a feasible one, since the measured results are in close agreement with the theoretical values. Accurate back-scattering measurements for obstacles of arbitrary shape and small scattering cross sections should be obtainable by this method provided a short microwave pulse of high power level is available.

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