Inverse Scattering of Two-Dimensional Objects Using an Enhancement Method

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Abstract : A 2D complete identification algorithm for dielectric and multiple objects immersed in air is presented. The employed technique consists of initially retrieving the shape and position of the scattering object using a linear sampling method and then determining the electric permittivity and conductivity of the scatterer using adjoint sensitivity analysis. This inversion algorithm results in high computational speed and efficiency, and it can be generalized for any scatterer structure. Also, this method is robust with respect to noise. The numerical results clearly show that this hybrid approach provides accurate reconstructions of various objects.

Keywords : inverse scattering, microwave imaging, two-dimensional objects, Linear Sampling Method (LSM)

Conference Title : ICSRD 2020 : International Conference on Scientific Research and Development

Conference Location : Chicago, United States

Conference Dates : December 12-13, 2020