

An electromagnetic inverse scattering problem for dielectrics that depend on two spatial variables via eikonal approximation

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A non-iterative method for constructing a class of 2-dimensional refractive index of a medium from forward scattering amplitude data of electromagnetic plane waves incident at different angles and frequencies was developed. The 2-dimensional eikonal approximation of scattering amplitude was gotten by considering the integral representation of the solution of Helmholtz equation, and then it is used to develop inverse method to construct 2-D refractive index. Also, numerical comparisons were carried for refractive index constructed from eikonal amplitude using the inverse method developed with the one constructed from the exact amplitude as well as the exact refractive index for some known examples. This inverse method will be effective in application because it is easy to implement and gives good recovery (or construction) of refractive index [1].

In this presentation, we summarize our result, its limitations, advantages and future works.

References

- [1] Chika, C. E., and M. A. Hooshyar, 2018: Electromagnetic inverse scattering problem for dielectrics that depend on two spatial variables via eikonal approximation (submitted).

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