

Windowed Green function method for layered-media scattering

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We present a new Windowed Green Function (WGF) method for the numerical integral-equation solution of problems of electromagnetic scattering by obstacles in presence of dielectric or conducting half-planes. The WGF method, which is based on use of integral kernels that can be expressed directly in terms of the free-space Green function, does not require evaluation of expensive Sommerfeld integrals. The proposed approach is fast, accurate, flexible and easy to implement. In particular straightforward modifications of existing solvers suffice to incorporate the WGF capability. The proposed method can be up to thousands of times faster, for a given accuracy, than a corresponding method based on the layer-Green-function.

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