

Parallel Evaluation of Sommerfeld Integrals for Multilayer Dyadic Green's Function

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Abstract : Sommerfeld-integrals (SIs) are commonly encountered in electromagnetics problems involving analysis of antennas and scatterers embedded in planar multilayered media. Generally speaking, the analytical solution of SIs is unavailable, and it is well known that numerical evaluation of SIs is very time consuming and computationally expensive due to the highly oscillating and slowly decaying nature of the integrands. Therefore, fast computation of SIs has a paramount importance. In this paper, a parallel code has been developed to speed up the computation of SI in the framework of calculation of dyadic Green's function in multilayered media. OpenMP shared memory approach is used to parallelize the SI algorithm and resulted in significant time savings. Moreover accelerating the computation of dyadic Green's function is discussed based on the parallel SI algorithm developed.

Keywords : Sommerfeld-integrals, multilayer dyadic Green's function, OpenMP, shared memory parallel programming

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