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Oscar P Bruno* (bruno@acm.caltech.edu). *Efficient evaluation of propagation and scattering of high-frequency acoustic and electromagnetic waves*. Preliminary report.

In this talk we will review a set of methodologies introduced recently for the numerical solution of problems of scattering by surfaces and volumes in the high-frequency regime. In particular, we present, for the first time, a novel numerical method for simulation of electromagnetic-wave propagation through non-spherically-symmetric atmospheres. For example, the proposed approach can accurately produce solutions for propagation of 25cm GPS signals across hundred of kilometers of realistic, non-spherically-symmetric atmospheres in computing times of the order of one hour in a present-day single-processor workstation—a task for which other high-frequency algorithms would require, in such single-processor computers, computing times of the order of several months. (Received August 13, 2007)