



PIMS / AMI Seminar

Friday, March 11, 2011
3:30 p.m.
CAB 365

Applied
Mathematics
Institute



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“Energy-Conserved S-FDTD Schemes for Three Dimensional Maxwell's Equations”

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Abstract

Computational electromagnetics has been playing a more and more important role in many areas of electromagnetic industry, such as radio frequency, microwave, integrated optical circuits, antennas, and wireless engineering. It is of special importance to develop efficient high-order methods for effective and accurately simulating propagation of electric and magnetic waves in large scale field and long time duration. On the other hand, in lossless medium, it is well known that the electromagnetic energy of the wave keeps constant at different time. However, most previous ADI or splitting schemes break this property of energy conservation. In this study, for keeping physically this invariance of electromagnetic energy, we develop energy-conserved high order S-FDTD schemes for Maxwell's equations in three dimensions. Both theoretical analysis and numerical experiment will be presented to show the efficiency of the new schemes in the talk.

Refreshments will be served in CAB 649 at 3:00 p.m.