

Polynomial Chaos for Dispersive Electromagnetics

Nathan Gibson, Oregon State University

Electromagnetic wave propagation in complex dispersive media is governed by the time dependent Maxwell's equations coupled to equations that describe the evolution of the induced macroscopic polarization. Recent efforts have been pursued in describing data for complex materials using polarization models with distributions of dielectric parameters. We describe an approximation method based on Polynomial Chaos and discuss the impact on space-time discretization properties including stability and dispersion analyses.