Center for Quantum Science and Engineering (CQSE)

Weekly Seminar
Jun. 10, 2011 (Friday)

TIME	Jun. 10, 14:30 ~ 15:30
TITLE	Acceleration Schemes in Computer Experiments
SPEAKER	Dr. Weichung Wang 王偉仲博士
	Department of Mathematics, NTU
PLACE	Rm716, CCMS & New Physics Building, NTU

Abstract

Computer experiment is an essential tool to explore physics. The experiment process usually requires an initial sampling plan and iterations involving computer simulations and infill experiment points. Focusing on the photonic crystals optimal design that maximizes the corresponding bandgap, we propose several schemes to accelerate these time-consuming computations. The schemes include (i) fast population methods on GPU for generating space-filing design sampling, (ii) efficient FFT preconditioner for the large-scale eigenvalue problems due to the Maxwell equations, and (iii) effective surrogates (meta-models) based on Gaussian process for guiding the choice of new experiment point. Numerical results will be demonstrated to illustrate the performance of the proposed algorithms.