

Department Of Mathematics

Applied Mathematics Seminar

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Title: NIPG-DG schemes for transformed master equations modeling open quantum systems

Abstract: This work presents a numerical analysis of a master equation modeling the interaction of a system with a noisy environment in the particular context of open quantum systems. It is shown that our transformed master equation has a reduced computational cost in comparison to a Wigner-Fokker-Planck model of the same system for the case of a general potential. Specifics of a NIPG-DG numerical scheme adequate for the convection-diffusion system obtained are then presented. This will let us solve computationally the transformed system of interest modeling our open quantum system. A benchmark problem, the case of a harmonic potential, is then presented, for which the numerical results are compared against the analytical steady-state solution of this problem.

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