

**The Hong Kong Polytechnic University
Department of Applied Mathematics**

Colloquium

Probabilistic superiority of stochastic symplectic methods via large deviations principle

By

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Abstract

Plenty of numerical experiments showing that stochastic symplectic methods are superior to non-symplectic ones especially in long-time computation, when applied to stochastic Hamiltonian systems. In this talk, we study the probabilistic superiority of stochastic symplectic methods by means of the theory of large deviations. We prove that stochastic symplectic methods are able to asymptotically preserve the large deviations principles for both the mean position and mean velocity of exact solution, while non-symplectic ones do not. This indicates that stochastic symplectic methods are able to approximate well the exponential decay speed of the hitting probability.

Bibliography

Chuchu Chen is currently an Assistant Professor at Institute of Computational Mathematics, Academy of Mathematics and Systems Science (AMSS), Chinese Academy of Sciences (CAS). Before joining Chinese Academy of Sciences, she received her PhD degree from AMSS, CAS, and worked as Postdoc at Purdue University and Michigan State University, USA. Prof. Chen is currently engaged in researches on numerical analysis of stochastic partial differential equations, especially on structure-preserving algorithms of stochastic Hamiltonian partial differential equations.

Date : 20 August, 2020 (Thursday)

Time : 14:00-15:00 (Hong Kong Standard Time GMT +8)

Venue : Online Talk via Zoom(Meeting ID: 959 5899 2679)

Click to join : <https://polyu.zoom.us/j/95958992679>

* The Talk will be given in English.



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*** * * ALL ARE WELCOME * * ***

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