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Applied Math and Numerical Analysis Seminar

Ergodicity and long-time behavior of the Random Batch Method for interacting particle systems

by

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Abstract :
We study the geometric ergodicity and the long time behavior of the Random Batch Method for interacting particle systems, which exhibits superior numerical performance in recent large-scale scientific computing experiments. We show that for both the interacting particle system (IPS) and the random batch interacting particle system (RB-IPS), the distribution laws converge to their respective invariant distributions exponentially, and the convergence rate does not depend on the number of particles N, the time step τ for batch divisions or the batch size p. Moreover, the Wasserstein distance between the invariant distributions of the IPS and the RB-IPS is bounded by $O(\sqrt{\tau})$, showing that the RB-IPS can be used to sample the invariant distribution of the IPS accurately with greatly reduced computational cost.

Date :	February 15, 2023 (Wednesday)
Time :	3:00pm – 4:00pm (Hong Kong SAR)
Zoom link:	https://cuhk.zoom.us/j/9792985952
Meeting ID:	9792985952
Passcode:	202266

All are Welcome