Faculty of Science
Department of Mathematics

NUS National University of Singapore

MA4198 PROJECT PROPOSAL (PROJECT CUM SEMINAR GROUP)

SUPERVISOR'S INFO

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PROJECT ID: PS2510-06

TITLE

Markov Chains and Mixing Time

BRIEF DESCRIPTION OF PROJECT

A fundamental question in the study of Markov chains and its applications is the speed of convergence to the stationary distribution of the Markov chain. The notion of mixing time provides a measure of such speed of convergence. The aim of the project is to understand the basic theory and techniques in the study of Markov chain mixing times and how they are applied in various examples. Topics include Metropolis and Glauber dynamics, mixing time, coupling, strong stationary times, hitting times, cover times, eigenvalues, cutoff phenomena, etc.

EXPECTATION/S

To be able to read, understand, and present the concepts, mathematical derivations and proofs, to fellow students and the supervisor.

PREREQUISITE/S (at level 3000 or below, with at most one course at level 3000)

MA3238/ST3236 Stochastic Processes I.

READING REFERENCE/S

Markov Chains and Mixing Time, by D. Levin and Y. Peres.
https://pages.uoregon.edu/dlevin/MARKOV/markovmixing.pdf