

THE UNIVERSITY



OF HONG KONG

Department of Mathematics

Numerical Mathematics and Applied Analysis Group Seminar (NMAA)

A Uniform Analysis of Combinatorial Markov Chains via Hopf Algebras

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in Room 210, Run Run Shaw Building, HKU

Abstract

We present a new method to study diverse models of breaking-and-recombination – including many popular card-shuffling schemes, the restructuring of trees and the restriction-then-induction of representations – by exploiting a connection to Hopf algebras. Specifically, the transition probabilities of these Markov chains can be expressed in terms of well-known “descent operators” on the algebras. Abstract Hopf algebra theory then allows explicit computation of the eigenvalues and eigenvectors of these chains, which yield for example the stationary distributions and expectations of certain statistics.

All are welcome
