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C. Y. Amy Pang* (amyfang@lacim.ca). *A Hopf-Algebraic Lift of the Down-up Markov Chain on Partitions to Permutations.*

Abstract. In “Card shuffling and the decomposition of tensor products”, Jason Fulman explores a Markov chain on partition diagrams, where each step removes a box then adds a new box. The stationary distribution of this chain is the Plancherel measure, which suggests that it is the image under the RSK-shape map of a chain on permutations with uniform stationary distribution. Fulman proves that one possible lift, starting from the identity permutation, is the “top-to-random shuffle”: remove the top card of a deck, and reinsert it at a uniformly chosen position. We construct a different lift, valid from more initial distributions, using a new and very general result regarding Markov chains from non-negative linear maps. This abstract result essentially reduces the lift construction to a well-known fact: the algebra of symmetric functions is a subquotient of the Malvenuto-Reutenauer Hopf algebra of permutations. This talk is based on the preprint of the same title (arXiv:1508.01570). (Received August 09, 2015)