1125-60-2089 **Peter Otto** (potto@willamette.edu), **Benjamin Savoie** (bsavoie@umflint.edu), **Ana Wright** (awright@willamette.edu) and **Renjun Zhu*** (renjun.zhu@berkeley.edu). *Mixing Times for the Generalized Rook's Walk.* Preliminary report.

Our work focuses on using path coupling, a powerful probabilistic tool, to find bounds on the mixing times of a class of Markov chains. The mixing time of a Markov chain measures the rate of convergence to its stationary distribution. This mixing time is of interest for sampling and simulations of random processes. The Markov chains we are investigating are restrictions on the random rook's walk on a d dimensional chessboard, which can also be considered random walks on the Cartesian powers of certain groups of circulant graphs. We prove bounds on the mixing times of these Markov chains, extending and generalizing previous results for the unrestricted case of the rook's walk. (Received September 19, 2016)