1145-05-1605 **Alan Krinik*** (ackrinik@cpp.edu), California State Polytechnic University, Pomona, **Gerardo Rubino**, INRIA, Campus de Beaulieu 35042 Rennes, France, and **Chon In (Dave) Luk**, **Jeffrey Yeh**, **Samuel Lyche**, **Lyheng Phey**, **John Kath**, **Christine Hoogendyk** and **Malachi C. Demmin**. *Generalized Ballot Box Problem and Fluctuations Within a Strip.*

The traditional ballot box problem is to determine the probability that candidate A is never behind candidate B during the counting of n ballots. We consider a ballot box problem having probabilities of voting for A, B or abstaining corresponding to one-step transition probabilities of certain types of birth–death Markov chains. Under our assumptions, a formula for the probability that candidate A is never behind candidate B during the counting of n ballots is determined in terms of known eigenvalues of a class of tridiagonal transition matrices P associated with the birth–death chain.

Using explicit formulas for the nth power of P, we discuss the fluctuation probability of certain lattice paths that are restricted to lie within a finite-width strip. We also consider the probability of staying in strip for certain types of circular birth–death chains. If time allows, we explore known eigenvalues of more general Markov chains. (Received September 25, 2018)