1154-60-2039 **Alan Krinik*** (ackrinik@cpp.edu), **Hubertus von Bremen**, **Saif A. Aljashamy**, **David Perez**, **Jeremy Lin**, **Thuy Vu Dieu Lu**, **Jeffrey Yeh**, **Aaron Kim** and **Mark Dela**. *Finite birth-death-like Markov chains with generalized catastrophe transitions.* Preliminary report.

Certain classes of finite birth-death-like chains whose transition probabilities are redefined to include generalized catastrophe probabilities are shown to have a one-step transition probability matrix, P, having distinct eigenvalues that are explicitly known and described by formulas that scale up as n, the number of states, increases. The eigenvalues of P for these Markov chains are shown to correspond to known eigenvalues of certain tridiagonal matrices. These conclusions follow from applying known linear algebraic properties of dual Markov chains. (Received September 17, 2019)