1135-37-2319 **Emily G. Burkhead***, CB #3250, Phillips Hall, Chapel Hill, NC 27599, and **Jane M. Hawkins**. *Modeling Virus Dynamics with Stochastic Cellular Automata.*

A cellular automaton (CA) is a continuous shift commuting map of a symbolic shift space on a finite alphabet and is a deterministic dynamical system of great interest in mathematics, physics, and computer science. While CAs are used to model complex dynamics, stochastic CA (SCA) are closely related to these and provide better models of physical phenomena when great uncertainty or extreme complexity is involved. SCA are dynamical systems that are homogeneous in time and space, modeling parallel processes like CA, but at each point in time and space, there are multiple local rules to choose from to update a state (always from the same finite list of rules). We discuss topological dynamical properties of SCA in the context of virus dynamics models. The models originally arose using clinical data, but we are able to articulate the differences in their viral dynamics using some topological dynamical properties. We consider surjectivity and topological transitivity, and we apply our definitions and results to existing models of dynamics that exhibit different behavior and capture properties of HIV and Ebola virus, labelling the behavior as H-dynamics (surjective and topologically transitive) and E-dynamics (neither). (Received September 25, 2017)