

1093-92-133

Timothy C Reluga* (treluga@psu.edu), Department of Mathematics, McAllister Hall,
University Park, PA 16802. *Exact model reductions for asynchronous boolean networks.*

Boolean networks are a class of finite-state machines used to model cellular biological processes. Boolean networks have a simpler state-space than classical differential equation models and can be easier to parameterize based on qualitative laboratory observations. However, the state spaces still scale exponentially with network size, and model-reduction techniques are very useful in transforming tangled networks into easier-to-understand versions. In this talk, I'll discuss a couple intuitive reduction rules and the challenges of proving basic properties of these rules. Ideas will draw from directed graph theory, topology, and dynamic systems. (Received August 08, 2013)