Abstract Submitted
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Redundancy and error resilience in Boolean networks TIAGO PEIXOTO, Technische Universität Darmstadt — Gene regulation of evolved organisms is marked by a high degree of reliability, despite its intrinsically noisy nature. We model reliable gene regulation as Boolean networks with redundant functions, and with a noise parameter playing the role of temperature. We show that dynamics on those networks is marked by a dynamical phase transition from non-ergodicity to ergodicity, as noise is increased. We obtain a general upper bound on the maximum amount of noise sustainable by any Boolean network, as a function of the number of inputs per node.

Relevant literature: Redundancy and error resilience in Boolean Networks, Tiago P. Peixoto, arXiv:0909.1740v1 (2009)

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