Liggett, Thomas M.; **Vandenberg-Rodes, Alexander**

Stability on $\{0, 1, 2, \dots\}^S$: birth-death chains and particle systems. (English) Zbl 1278.60144

Brändén, Petter (ed.) et al., Notions of positivity and the geometry of polynomials. Dedicated to the memory of Julius Borcea. Basel: Birkhäuser (ISBN 978-3-0348-0141-6/hbk; 978-3-0348-0142-3/ebook). Trends in Mathematics, 311-329 (2011).

Authors' abstract: A strong negative dependence property for measures on $\{0, 1\}^n$-stability was recently developed in [*J. Borcea* et al., J. Am. Math. Soc. 22, No. 2, 521–567 (2009; Zbl 1206.62096)], by considering the zero set of the probability generating function. We extend this property to the more general setting of reaction-diffusion processes and collections of independent Markov chains. In one dimension the generalized stability property is now independently interesting, and we characterize the birth-death chains preserving it.

For the entire collection see [Zbl 1222.00033].

Reviewer: Mihai Gradinaru (Rennes)

MSC:

60K35 Interacting random processes; statistical mechanics type models; percolation theory
33C45 Orthogonal polynomials and functions of hypergeometric type (Jacobi, Laguerre, Hermite, Askey scheme, etc.)
60G50 Sums of independent random variables; random walks
60J80 Branching processes (Galton-Watson, birth-and-death, etc.)
62H20 Measures of association (correlation, canonical correlation, etc.)

Keywords:

stable polynomials; birth-death chain; negative association; reaction-diffusion processes

Full Text: DOI arXiv