

Cluster expansions and stochastic processes. An unexploited legacy of Dobrushin

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Cluster expansions form the base of perturbative arguments in rigorous statistical mechanics. Somehow surprisingly, the technique has not been adopted, or even judged useful, by the stochastic process community. The only known exception is contained in a posthumous review by Dobrushin in which cluster expansions are used to show analyticity results in Markov processes. I will review Dobrushin's approach and present work showing how a related approach yields general results on properties of hidden Markov processes. The latter is joint work with Evgeny Verbitskiy (Leiden University).