This is a review submitted to Mathematical Reviews/MathSciNet.

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Title: Free jump dynamics in continuum.

MR Number: MR3453065

Primary classification:

Secondary classification(s):

Review text:

The paper deals with a Markov process in the space of discrete subsets (=configurations) $\Gamma = \{\gamma, \dots\}$ of a Euclidean space specified by dynamics such as: the rate of jumps from a configuration γ to one obtained by replacing a point x of γ by y occurs at rate $a(x-y)$ for an integrable symmetric function a. This specifies the generator of the Markov process which leads to the corresponding Kolmogorov backward equation and its formal dual, the Fokker-Planck or forward equation describing the evolution of the law of the Markov process. The main result of the paper is that, under certain conditions involving the (law of the) initial configuration, the differential equation obtained by considering the n-point correlation functions, simultaneously for all finite n, has a unique global solution. Moreover, if $(k_0^{(n)})_{n\geq 0}$ are valid correlation functions for the initial law μ_0 then the solution $(k_t^{(n)})_{n\geq 0}$ to the differential equation uniquely specifies a probability measure μ_t on Γ that is precisely the law of the Markov process at time t.