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Fragmentation process in continuum

An individual-based model of an infinite system of point particles in $\mathbb{R}^d$ is discussed. In this model, each particle randomly produces a finite number of new particles ('cloud') and disappears afterwards. The phase space for this model is the set Γ of all locally finite subsets of $\mathbb{R}^d$. The system's states are probability measures on Γ. To characterise such states we use appropriate real functions F on Γ (called observables) the evolution of which is obtained by means of the Kolmogorov equation

$$\frac{d}{dt}F_t = LF_t, \qquad F_t|_{t=0} = F_0, \qquad t > 0.$$

The 'generator' L specifies the model. The Markov evolution of the states is described in terms of their correlation functions in a scale of Banach spaces. We prove the existence and uniqueness of solutions of the corresponding evolution equation by using the Ovcyannikov's method. We also prove that the obtained solution corresponds to the unique state.