INSTITUTUL DE MATEMATICA “SIMION STOILOW” AL ACADEMIEI ROMANE

Seminarul de Teoria Potentialului

Evolution of states of an infinite fission-death system

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Abstract: A microscopic fission-death model in the continuum is proposed and studied. In the model, point particles interact with each other and perform random actions: the death of the particle located at x which occurs independently with rate $m(x)\geq 0$ and under the influence (competition) of the other particles in a configuration, and an independent fission of the particle located at x into two particles (located at y_1 and y_2) with rate $b(x|y_1, y_2)\geq 0$. The evolution of states of the system $\mu_0 \rightarrow \mu_t$ is obtained by employing the correlation functions. We prove the existence and uniqueness of solutions of the evolution equation for the correlation functions that yields the evolution $k_0 \rightarrow k_t$ on a finite time interval. Then we prove that each k_t is the correlation function of a unique state μ_t and continue k_t to all $t>0$.