State Classification for a Class of Interacting Superprocesses with Location Dependent Branching

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Abstract

The spatial structure of a class of superprocesses which arise as limits in distribution of a class of interacting particle systems with location dependent branching is investigated. The criterion of their state classification is obtained. Their effective state space is contained in the set of purely-atomic measures or the set of absolutely continuous measures according as one diffusive coefficient $c(x) equiv 0 $ or $|c(x)| geq epsilon > 0$ while another diffusive coefficient $h in C^{2}_{b}(R) $.

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