SUPERPROCESSES OVER A STOCHASTIC FLOW WITH SPATIALLY DEPENDENT BRANCHING

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Abstract: We consider a typical superprocess over a stochastic flow, which arises from the attempt of modeling the behavior of phytoplankton blooms in oceanic tides. Such a model was originally studied by Skoulakis and Adler in 2001. In this talk, a generalization of their model is discussed, in which the branching of particles depends on their positions. We show the existence of superprocesses in a random medium (flow) with location dependent branching. Technically, we make use of a dual relationship to establish the uniqueness of the martingale problem and to obtain the moment formulas.