

Controlled Branching Processes with Continuous States

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Abstract

The controlled branching process with continuous space of states and time-dependent immigration introduced by Adke and Gadag (1995) is considered. The control function is a process with independent stationary increments. Theorems allowing one to obtain limit theorems for this model from those of simple branching processes and vice versa are proved. Applying these results, limit distributions are obtained for critical processes in the case of decreasing and increasing rate of immigration when offspring distribution has infinite variance.

Keywords: Counting process, branching process, time-dependent immigration, independent increment.

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