

A generalization of the birth-and-assassination process with applications to immunology and rumor spreading

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Abstract

In the 90's, Aldous and Krebs introduced a variant of the continuous-time branching process which is related to the limiting behavior of a certain queuing system with blocking. In this variant, each individual reproduces independently at a certain rate during its lifetime but it is only at risk of death after the death of its parent. The behavior of this model is interesting by itself, for instance, it exhibits a certain special recursive structure and a surprising heavy-tail phenomena which is very different from the usual branching process. Recently, this process has attracted considerable attention. For instance, it appears as a scaling limit of certain SIR models and also can be related to certain branching random walks. In this talk, we introduce a generalization of this model and show that it finds interesting applications in immunology and rumor spreading.

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