Asymptotic behavior of CLS estimators of offspring means for multitype branching processes

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In this talk INAR(p) processes (so-called integer-valued autoregressive processes of order p) are investigated. These processes can be considered as special multitype branching processes with Bernoulli offspring distributions. We are interested in the unstable (or, in the language of branching processes, critical) processes.

First, under a natural assumption, it is proven that the sequence of appropriately scaled random step functions formed from an unstable INAR(p) process converges towards a squared Bessel process. Then the asymptotic behavior of conditional least squares estimators of the offspring means of unstable INAR(2) is described. The limit distributions are unusual.