

Statistical inference of 2-type critical Galton-Watson processes with immigration

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The most important parameter of a multi-type Galton-Watson process with immigration is its offspring mean matrix. Its spectral radius, called criticality parameter, will also be studied. The asymptotic behavior of the CLS estimators of the offspring mean matrix for a general 2-type critical positively regular Galton-Watson branching process with immigration will be described. It turns out that in a degenerate case this estimator is not even weakly consistent. The asymptotic behavior of a natural estimator of the spectral radius of the offspring mean matrix is the same as the asymptotic behavior of the CLS estimator of the offspring mean in the single-type case.