PARAMETRIC ESTIMATION OF MULTITYPE BRANCHING PROCESSES WITH MARKOV CHAIN MONTE CARLO METHODS

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We consider multitype branching stochastic processes with power series offspring distributions and estimate the parameters of the offspring distribution by using two sampling schemes. We pay attention to the following two cases - when only the size of the first N generations is known and when only the number of particles with the same number of children in the first N generations is observed.

We apply a Bayesian approach for the multitype branching processes with multinomial, negative multinomial and Poisson offspring distribution and approximate the posterior distribution of the parameters using MCMC methods.

Our work contains simulations and examples calculated using R.

Acknowledgements

This work is supported by KP-06-H22/3 of the NSF at the Ministry of Science and Education of Bulgaria (КП-06-Н22/3 на ФНИ при МОН)

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