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Antithetic random variables, for
simulation of complex stochastic systems

ABSTRACT

This paper deals with the optimality and efficiency of antithetic random variates in estimating output parameters of general complex stochastic systems (e.g., reliability systems, stochastic networks, queues etc.) with elements linked by multivariate dependence. It is shown that antithetic random variates are much more accurate than the crude Monte Carlo method, requires less CPU time and can be efficiently used by simulation practitions. The validity of the theory is demonstrated by simulation queueings and reliability systems and stochastic networks of different complexity.