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Poisson twister generator by cumulative frequency technology. (English) Zbl 07257180

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Summary: The widely known generators of Poisson random variables are associated with different modifications of the algorithm based on the convergence in probability of a sequence of uniform random variables to the created stochastic number. However, in some situations, this approach yields different discrete Poisson probability distributions and skipping in the generated numbers. This article offers a new approach for creating Poisson random variables based on the complete twister generator of uniform random variables, using cumulative frequency technology. The simulation results confirm that probabilistic and frequency distributions of the obtained stochastic numbers completely coincide with the theoretical Poisson distribution. Moreover, combining this new approach with the tuning algorithm of basic twister generation allows for a significant increase in length of the created sequences without using additional RAM of the computer.

MSC:

62 Statistics
65 Numerical analysis

Keywords:

pseudorandom number generator; stochastic sequences; Poisson distribution; twister generator

Software:

5tbl; Diehard

Full Text: DOI

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