

Re: Software roulette statistics

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- *From:* strgh@xxxxxxxxxxxxxxxxxxxxxxxxxxxxx ()
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In article <1164775344.018154.251500@xxxxxxxxxxxxxxxxxxxxxxxxxxxxx>, "Reef Fish" <large_nassua_grouper@xxxxxxxxx> writes:

...

The property of "mainly on the plain" or hyperplanes is common the ALL linear congruential generators! They are of the form:

$$R(i+1) = (A + R(i) B) \text{ mod } M,$$

Different choices of A, B, and M affect the cycle lengths, but the period of the LCG is AT MOST M, often considerably less than M.

But 2^{64} and 2^{32} are still huge numbers on 1 dimension. The defect of ALL LCG, as I said (which is well known) is in HIGH dimension simulation only, because the n-tuples of coordinates all lie of hyperplanes (lattices) often with huge "holes" parallelepiped holes that there are special tests for them.

The Mersenne twister you mentioned is the same kind of LCG, often recommended with $A = 1664525$, $B = 1013904223$, $M = 2^{32}$. It's better and faster than most other LCGs but suffer the same DEFECTS shared by ALL LCG generators.

Note that the Mersenne twister is based on the theory of linear recurring sequences over a finite field, and is totally different from an LCG.

It's more like a souped-up Tausworthe generator.

The most commonly implemented Mersenne twister has a period of $2^{19937} - 1$, and is for most purposes free of the obvious defects shared by all LCG generators.

— Ewart Shaw

...

— Reef Fish Bob.

—

J.E.H.Shaw [Ewart Shaw] strgh@xxxxxxxxxxxxxxxxx TEL: +44 2476 523069

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Department of Statistics, University of Warwick, Coventry CV4 7AL, UK

<http://www.warwick.ac.uk/statsdept> <http://www.ewartshaw.co.uk>

Will read usenet posts up to the first insult (which may be in the Subject)

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