
Subject: Re: How good is Randomu?

Posted by [Rick Towler](#) on Fri, 04 Jan 2008 18:24:23 GMT

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I'm not a statistician, but as far as I can tell ran1 from NRC and thus randomu have a period of $\sim 10^9$. This is very short and surprises me...

I guess that is why you can buy the IDL Analyst add on. More info on ran1 (and thus randomu) is here:

<http://www.nrbook.com/a/bookcpdf/c7-1.pdf>

MATLAB's default generator is based on "Marsaglia's ziggurat algorithm" with a period of 2^{64} . The paper and example C code are here:

<http://www.jstatsoft.org/v05/i08>

Whatever generator you choose, you'll going to want to code it up as a DLM or be *very* patient. I think you'll run into a real bottleneck generating all those random numbers in IDL. Looking at the ziggurat code, it would be pretty easy to code it up as a DLM. I recommend Ronn Kling's "Calling C/C++ from IDL" www.kilvarock.com.

-Rick

john.copley@nist.gov wrote:

- > Many thanks to those of you who responded to my posting entitled "
- > Bizarre (?) behavior of randomu". Your comments have been very useful.
- >
- > I now have a different question. How good is Randomu? I am developing
- > some code to calculate multiple neutron scattering intensities and
- > typically in any given run I would expect to invoke randomu (or some
- > other IDL procedure that generates uniformly distributed pseudo-random
- > numbers between 0 and 1) several hundred to several thousand times,
- > each time obtaining of order 1 million numbers, in other words
- > generating 10^9 or more random numbers in any given run. Is randomu up
- > to the task, or do I need something better?
- >
- > If I need something better what should I use? I have come across
- > exotica such as the "MT19937 generator of Makoto Matsumoto and Takuji
- > Nishimura [which] is a variant of the twisted generalized feedback
- > shift-register algorithm" and "has a Mersenne prime period of 2^{19937}
- > - 1 (about 10^{6000}) and is equi-distributed in 623 dimensions" but
- > that sounds like overkill. On the other hand the so-called Wichmann-
- > Hill algorithm looks interesting and it is supposedly very easy to
- > code.
- >

- > Thoughts, anyone?
 - > Many thanks
 - > John
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