

### [6.37] Random number generator algorithm

For some simulations and Monte Carlo numerical methods, it is important that the random number generator have a sufficiently long period. I emailed TI-cares concerning this. Here is the response:

*The TI-89 and TI-92 Plus all use the same random number generator. Rand() creates random numbers between 0 and 1.*

*The specific algorithm is described in a research contribution by L'ecuyer [1].*

*Essentially, this algorithm combines two multiplicative linear congruential generators to form a single generator with extremely long period. Our particular implementation of random number generator uses the first two sets of coefficients from Table III on page 747 of reference [1].*

*This generator was submitted to several tests: equidistribution test, serial test, gap test, poker test, coupon's collector test, permutation test, runs-up test, maximum-of-t test, and collision test. The random number generator we implemented in these units passes all these tests for randomness.*

*References.*

*1. L'ecuyer, P. Efficient and Portable Combined Random Number Generators. Communications of the ACM, Vol. 31, Number 6 (June 1988), pp. 742-749, 774.*