

**See Also**

Chapter III-12, **Statistics** for a function and operation overview; the **StatsPowerPDF**, **StatsInvPowerCDF** and **StatsPowerNoise** functions.

**StatsPowerNoise****StatsPowerNoise(b, c)**

The StatsPowerNoise function returns a pseudorandom value from the power distribution function with probability distribution:

$$f(x; b, c) = \frac{c}{x} \left( \frac{x}{b} \right)^c.$$

The random number generator initializes using the system clock when Igor Pro starts. This almost guarantees that you will never repeat a sequence. For repeatable “random” numbers, use SetRandomSeed. The algorithm uses the Mersenne Twister random number generator.

**See Also**

The **SetRandomSeed** operation.

The **StatsPowerPDF**, **StatsInvPowerCDF** and **StatsInvPowerCDF** functions.

**Noise Functions** on page III-390.

Chapter III-12, **Statistics** for a function and operation overview.

**StatsPowerPDF****StatsPowerPDF(x, b, c)**

The StatsPowerPDF function returns the Power Function probability distribution function

$$f(x, b, c) = \frac{|c|}{x} \left( \frac{x}{b} \right)^c,$$

where b is a scale parameter and c is a shape parameter.

For  $b, c > 0$ , x is drawn from  $b \geq x \geq 0$ .

For  $b > 0, c < 0$ , x is drawn from  $x > b$ .

For  $b < 0, c > 0$ , x is drawn from  $-b \leq x \leq 0$ .

For  $b < 0, c < 0$ , x is drawn from  $x < -b$ .

Note that for  $-1 < c < 0$  the average diverges and the magnitude of a mean calculated from N samples will increase indefinitely with N.

**See Also**

Chapter III-12, **Statistics** for a function and operation overview; the **StatsPowerCDF**, **StatsInvPowerCDF** and **StatsPowerNoise** functions.

**StatsQCDF****StatsQCDF(q, r, c, df)**

The StatsQCDF function returns the value of the Q cumulative distribution function for r the number of groups, c the number of treatments, and df the error degrees of freedom ( $f = rc(n-1)$  with sample size n).

**Details**

The Q distribution is the maximum of several Studentized range statistics. For a simple Tukey test, use  $r=1$ .

**References**

Copenhaver, M.D., and B.S. Holland, Multiple comparisons of simple effects in the two-way analysis of variance with fixed effects, *Journal of Statistical Computation and Simulation*, 30, 1-15, 1988.