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Submitter :
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Kolmogorov Distribution

Function subprogram PROBKL calculates the Kolmogorov distribution function

$$P(X) \;=\; -2\sum_{j=1}^{\infty}(-1)^j\exp(-2j^2X^2)$$

for real arguments X.

Structure:

FUNCTION subprogram
User Entry Name: PROBKL

Usage:

In any arithmetic expression,

PROBKL(X) has the value $P(\mathtt{X})$,

where PROBKL and X are of type REAL.

Method:

Direct evaluation or using functional relations.

Accuracy:

Approximately seven digits are correct. Results smaller than 10^{-40} (corresponding to $X > 6.8116$) are set to zero. Note that the above formula has a statistical meaning only for "large" $N(> 10)$.

Notes:

1. For an experimental distribution with N events and a maximum deviation ΔN from a hypothetical distribution, $P(\mathtt{X})$ with $\mathtt{X} = \Delta N\sqrt{N}$ gives the confidence level for the null hypothesis.
2. To compare two experimental distributions with M and N events, respectively, one may use $\mathtt{X} = \sqrt{MN/(M+N)}\Delta N$.

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