Package ‘pbivnorm’

August 29, 2016

Title Vectorized Bivariate Normal CDF
Version 0.6.0
Date 2015-01-23
Author Fortran code by Alan Genz. R code by Brenton Kenkel, based on Adelchi Azzalini's 'mnormt' package.
Maintainer Brenton Kenkel <brenton.kenkel@gmail.com>
Description Provides a vectorized R function for calculating probabilities from a standard bivariate normal CDF.
License GPL (>= 2)
URL https://github.com/brentonk/pbivnorm
NeedsCompilation yes
Repository CRAN
Date/Publication 2015-01-23 16:18:21

R topics documented:

 pbivnorm ................................................................. 1

Index  3

-----------------------------------------------
 pbivnorm                      Standard bivariate normal CDF
-----------------------------------------------

Description

Calculate probabilities from the CDF of a standard bivariate normal distribution.

Usage

pbivnorm(x, y, rho = 0, recycle = TRUE)
Arguments

- **x**: vector of upper integration limits for the CDF. May also be a two-column matrix, in which case **y** should not be used.
- **y**: vector of upper integration limits.
- **rho**: correlation parameter.
- **recycle**: whether to automatically recycle the vectors **x**, **y**, and **rho** to conform to whichever is longest. If FALSE, all three must be the same length.

Details

This function returns values identical to those of `biv.nt.prob` in the `mnormt` package, but is vectorized to reduce the number of Fortran calls required for computation of many probabilities.

Value

Numeric vector of probabilities.

Author(s)

Fortran code by Alan Genz (see references). R interface by Brenton Kenkel (brenton.kenkel@gmail.com), based on code from Adelchi Azzalini’s `mnormt` package.

References


Examples

```r
x <- rnorm(10)
y <- rnorm(10)
rho <- runif(10)
pbivnorm(x, y, rho)

X <- cbind(x, y)
pbivnorm(X, rho = rho)

## rho can be a single value, unless recycling is disallowed
rho <- runif(1)
pbivnorm(x, y, rho)
```
Index

pbivnorm, 1