

Package ‘foldedt’

March 21, 2026

Type Package

Title The Folded t Family of Distributions

Version 1.0

Date 2026-03-18

Author Michail Tsagris [aut, cre]

Maintainer Michail Tsagris <mtsagris@uoc.gr>

Depends R (>= 4.0)

Imports Rfast, stats

Suggests Rfast2

Description

Maximum likelihood estimation of the folded t and related distributions. The reference paper is: Psarakis and Panaretos (1990). ``The folded t distribution". Communications in Statistics-Theory and Methods, 19(7): 2717--2734. <doi:10.1080/03610929008830342>.

License GPL (>= 2)

NeedsCompilation no

Repository CRAN

Date/Publication 2026-03-21 10:20:08 UTC

Contents

foldedt-package	2
dfoldedt	2
foldedt.mle	3
half.t.mle	4
half.t1.mle	5

Index	7
--------------	----------

foldedt-package *The folded t family of distributions.*

Description

Maximum likelihood estimation of the folded t and related distributions. Probability and density functions, and random generation are also included.

Details

Package: foldedt
Type: Package
Version: 1.0
Date: 2026-03-18
License: GPL-2

Maintainers

Michail Tsagris <mtsagris@uoc.gr>.

Author(s)

Michail Tsagris <mtsagris@uoc.gr>.

References

Psarakis and Panaretos (1990). The folded t distribution. *Communications in Statistics—Theory and Methods*, 19(7): 2717–2734.

dfoldedt *Density function of the (non-standardized) folded t distribution*

Description

Density function of the (non-standardized) folded t distribution.

Usage

```
dfoldedt(y, mu, s2, v, logged = FALSE)
```

Arguments

y	A vector with positive values.
mu	The location parameter, μ .
s2	The σ^2 parameter.
v	The degrees of freedom, v .
logged	If you want the logarithm of the density set this equal to TRUE.

Value

A vector with the (logged) density function values.

Author(s)

Michail Tsagris.

R implementation and documentation: Michail Tsagris <mtsagris@uoc.gr>.

References

Psarakis and Panaretos (1990). The folded t distribution. *Communications in Statistics—Theory and Methods*, 19(7): 2717–2734.

https://en.wikipedia.org/wiki/Folded-t_and_half-t_distributions

See Also

[foldedt.mle](#)

Examples

```
y <- abs( rt(10, 10, 3) )
dfoldedt(y, mu = 3, s2 = 1, v = 10)
```

foldedt.mle

MLE of the folded t distribution

Description

MLE of the folded t distribution.

Usage

```
foldedt.mle(x)
```

Arguments

x A numerical vector with positive real numbers.

Value

A list including:

`param` The estimated location and scatter parameters, and the degrees of freedom of the folded t distribution.

`loglik` The value of the maximised log-likelihood.

Author(s)

Michail Tsagris.

R implementation and documentation: Michail Tsagris <mtsagris@uoc.gr>.

References

Psarakis and Panaretos (1990). The folded t distribution. *Communications in Statistics—Theory and Methods*, 19(7): 2717–2734.

https://en.wikipedia.org/wiki/Folded-t_and_half-t_distributions

See Also

[half.t.mle](#), [half.t1.mle](#), [dfoldedt](#)

Examples

```
x <- abs( rt(1000, 5, 2) )
foldedt.mle(x)
```

<code>half.t.mle</code>	<i>MLE of the half t distribution</i>
-------------------------	---------------------------------------

Description

MLE of the half t distribution.

Usage

```
half.t.mle(x)
```

Arguments

`x` A numerical vector with positive real numbers.

Details

The half-t distribution with ν degrees of freedom and scatter parameter $\sigma > 0$ has density:

$$f(x) = \frac{2\Gamma\left(\frac{\nu+1}{2}\right)}{\sqrt{\nu\pi}\sigma\Gamma\left(\frac{\nu}{2}\right)} \left(1 + \frac{x^2}{\nu\sigma^2}\right)^{-\frac{\nu+1}{2}}, \quad x \geq 0.$$

Value

A list including:

- | | |
|--------|--|
| param | The estimated degrees of freedom and the scatter parameter of the half t distribution. |
| loglik | The value of the maximised log-likelihood. |

Author(s)

Michail Tsagris.

R implementation and documentation: Michail Tsagris <mtsagris@uoc.gr>.

References

Psarakis and Panaretos (1990). The folded t distribution. *Communications in Statistics—Theory and Methods*, 19(7): 2717–2734.

https://en.wikipedia.org/wiki/Folded-t_and_half-t_distributions

See Also

[halft1.mle](#)

Examples

```
x <- abs( rt(1000, 5) )
halft.mle(x)
```

halft1.mle	<i>MLE of the half t distribution</i>
------------	---------------------------------------

Description

MLE of the half t distribution with unit scatter parameter.

Usage

```
halft1.mle(x, tol = 1e-07)
```

Arguments

- | | |
|-----|---|
| x | A numerical vector with positive real numbers. |
| tol | The tolerance level up to which the maximisation stops set to 1e-07 by default. |

Details

The half-t distribution with $\nu > 0$ degrees of freedom, zero location parameter and unit scatter parameter has density:

$$f(x) = \frac{2\Gamma\left(\frac{\nu+1}{2}\right)}{\sqrt{\nu\pi}\Gamma\left(\frac{\nu}{2}\right)} \left(1 + \frac{x^2}{\nu}\right)^{-\frac{\nu+1}{2}}, \quad x \geq 0.$$

Value

A list including:

iters	The number of iterations required by the Newton-Raphson algorithm.
nu	The estimated degrees of freedom of the half t distribution.
loglik	The value of the maximised log-likelihood.

Author(s)

Michail Tsagris.

R implementation and documentation: Michail Tsagris <mtsagris@uoc.gr>.

References

Psarakis and Panaretos (1990). The folded t distribution. Communications in Statistics—Theory and Methods, 19(7): 2717–2734.

https://en.wikipedia.org/wiki/Folded-t_and_half-t_distributions

See Also

[half1.mle](#), [dfoldedt](#)

Examples

```
x <- abs( rt(1000, 5) )
half1.mle(x)
```

Index

`dfoldedt`, [2](#), [4](#), [6](#)

`foldedt-package`, [2](#)

`foldedt.mle`, [3](#), [3](#)

`halft.mle`, [4](#), [4](#), [6](#)

`halft1.mle`, [4](#), [5](#), [5](#)