Package ‘nakagami’

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Type Package

Title Functions for the Nakagami Distribution

Version 1.1.0

Description Density, distribution function, quantile function and random
generation for the Nakagami distribution of Nakagami (1960)

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Encoding UTF-8

Imports assertthat

Suggests testthat, knitr, covr, rmarkdown

RoxygenNote 7.1.1

URL https://github.com/JonasMoss/nakagami

BugReports https://github.com/JonasMoss/nakagami/issues

NeedsCompilation no

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The Nakagami Density

Description

Density, distribution function, quantile function and random generation for the Nakagami distribution with parameters shape and scale.

Usage

dnaka(x, shape, scale, log = FALSE)
pnaka(q, shape, scale, lower.tail = TRUE, log.p = FALSE)
qnaka(p, shape, scale, lower.tail = TRUE, log.p = FALSE)
rnaka(n, shape, scale)

Arguments

x, q 
vector of quantiles.
shape 
vector of positive shape parameters.
scale 
vector of positive scale parameters.
log, log.p 
logical; if TRUE, probabilities p are given as log(p).
lower.tail 
logical; if TRUE (default), probabilities are P[X ≤ x] otherwise, P[X > x].
p 
vector of probabilities.
n 
number of observations. If length(n) > 1, the length is taken to be the number required.

Details

The Nakagami distribution (Nakagami, 1960) with shape $m$ and scale $\Omega$ has density

$$2m^m/\Gamma(m)\Omega^m x^{(2m-1)}e^{-(m/\Omega x^2)}$$

for $x \geq 0$, $m > 0$ and $\Omega > 0$.

If $Y$ is Gamma distributed with $shape = m$ and $rate = m/\Omega$ then $X = \sqrt{Y}$ is Nakagami distributed with $shape = m$ and $scale = \Omega$.

Sometimes, specifically in radio channels modeling, the parameter $m$ is constrained to $m \geq 1/2$, but the density is defined for any $m > 0$ (Kolar et al., 2004).
**Value**

dnaka gives the density, pnaka gives the distribution function, qnaka gives the quantile function and rnaka generates random deviates.

The length of the result is determined by n for rnaka, and is the maximum of the lengths of the numerical arguments for the other functions.

The numerical arguments other than n are recycled to the length of the result.

**References**


**See Also**

The Gamma distribution is closed related to the Nakagami distribution.

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**suppress_olw**

*Suppress object length incompatibility warnings*

**Description**

Suppress object length incompatibility warnings

**Usage**

`suppress_olw(expr)`

**Arguments**

`expr` expression to be evaluated.
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