

# Package ‘disclap’

February 19, 2015

**Type** Package

**Title** Discrete Laplace Exponential Family

**Version** 1.5

**Date** 2014-04-07

**Author** Mikkel Meyer Andersen and Poul Svante Eriksen

**Maintainer** Mikkel Meyer Andersen <mikl@math.aau.dk>

**Description** Discrete Laplace exponential family for models such as a generalized linear model

**License** GPL-2

**LazyLoad** yes

**NeedsCompilation** no

**Repository** CRAN

**Date/Publication** 2014-04-07 13:35:05

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Discrete Laplace distribution

*Probability mass function, distribution function, and random generation for the discrete Laplace distribution with parameter  $0 \leq p < 1$ .*

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## Description

Calculates the mass of observations from the discrete Laplace distribution.

**Usage**

```
ddisclap(x, p)
pdisclap(x, p, lower.tail = TRUE)
rdisclap(n, p)
```

**Arguments**

x	vector of observations
p	the parameter with $0 \leq p < 1$
lower.tail	logical; if TRUE (default), probabilities are $P[X \leq x]$ , otherwise, $P[X > x]$ .
n	number of observations to generate

**Details**

The probability mass function for the discrete Laplace distribution with parameter  $0 < p < 1$  is given by  $P(X = x) = \frac{1-p}{1+p} p^{|x|}$  for  $x \in \mathbf{Z}$ .

If x is a vector, then p must have either length 1 or the same length as x. If p has length 1, then the value will be reused for all values in x.

**Value**

'ddisclap' gives the probability mass, 'pdisclap' gives the distribution function, and 'rdisclap' generates random deviates.

**Author(s)**

Mikkel Meyer Andersen <mikl@math.aau.dk> and Poul Svante Eriksen

**See Also**

[DiscreteLaplace](#)

**Examples**

```
p <- 0.3
xs <- (-4):4
probd <- ddisclap(xs, p)
data.frame(xs, probd)
plot(xs, probd, type = "l", xlab = "x", ylab = "P(X = x; p)")
```

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Discrete Laplace exponential family  
*Discrete Laplace exponential family*

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## Description

Discrete Laplace exponential family for models such as a generalized linear model.

## Usage

```
DiscreteLaplace()
```

## Details

This family can be used in for example fitting a generalized linear model using the [glm](#) or [glm.fit](#) function.

## Value

See [binomial](#) or [poisson](#)

## Author(s)

Mikkel Meyer Andersen <mikl@math.aau.dk> and Poul Svante Eriksen

## See Also

[glm](#) [glm.fit](#) [ddisclap](#) [binomial](#) [poisson](#)

## Examples

```
xs <- abs(rdisclap(100, 0.1))
fit <- glm(xs ~ 1, family = DiscreteLaplace())
summary(fit)
theta <- as.numeric(coef(fit)[1])
mu <- DiscreteLaplace()$linkinv(theta)
p <- (sqrt(1 + mu^2) - 1) / mu
p
```

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Discrete Laplace package

*Discrete Laplace Family*

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**Description**

Discrete Laplace Family for models such as a generalized linear model.

**Details**

DiscreteLaplace() ddisclap(x, p) pdisclap(x, p, lower.tail = TRUE) rdisclap(n, p)

**Author(s)**

Mikkel Meyer Andersen and Poul Svante Eriksen

Maintainer: Mikkel Meyer Andersen <mikl@math.aau.dk>

**See Also**

[DiscreteLaplace](#) [ddisclap](#) [pdisclap](#) [rdisclap](#)

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