## Package ‘disclap’

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**Type** Package  
**Title** Discrete Laplace Exponential Family  
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**Description** Discrete Laplace exponential family for models such as a generalized linear model  
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### Description

Calculates the mass of observations from the discrete Laplace distribution.
Discrete Laplace distribution

Usage

disclap(x, p)
discp(x, p, lower.tail = TRUE)
discr(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 \(x \in \mathbb{Z}\).

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)

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See Also

- `discretelaplace`

Examples

```r
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)")
```
Discrete Laplace exponential family

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)

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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
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)**

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**See Also**

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