Package 'poibin'

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Version 1.5

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Title The Poisson Binomial Distribution

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Description Implementation of both the exact and approximation methods for computing the cdf of the Poisson binomial distribution as described in Hong (2013) <doi:10.1016/j.csda.2012.10.006>. It also provides the pmf, quantile function, and random number generation for the Poisson binomial distribution. The C code for fast Fourier transformation (FFT) is written by R Core Team (2019)<https://www.R-project.org/>, which implements the FFT algorithm in Singleton (1969) <doi:10.1109/TAU.1969.1162042>.

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`poibin-package` *The Poisson Binomial Distribution*

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Title:	The Poisson Binomial Distribution
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References

Hong, Y. (2013). On computing the distribution function for the Poisson binomial distribution. Computational Statistics & Data Analysis, Vol. 59, pp. 41-51.

R Core Team (2019). "R: A Language and Environment for Statistical Computing," R Foundation for Statistical Computing, Vienna, Austria, url: https://www.R-project.org/.

Singleton, R. C. (1969). An algorithm for computing the mixed radix fast Fourier transform. IEEE Transactions on Audio and Electroacoustics, Vol. 17, pp. 93-103.

Examples

```
kk=0:10
pp=c(.1,.2,.3,.4,.5)
ppoibin(kk=kk, pp=pp, method = "DFT-CF",wts=rep(2,5))
ppoibin(kk=kk, pp=pp, method = "RF",wts=rep(2,5))
ppoibin(kk=kk, pp=pp, method = "RNA",wts=rep(2,5))
```

```
ppoibin(kk=kk, pp=pp, method = "NA",wts=rep(2,5))
ppoibin(kk=kk, pp=pp, method = "PA",wts=rep(2,5))
dpoibin(kk=kk, pp=pp,wts=rep(2,5))
qpoibin(qq=0:10/10,pp=pp,wts=rep(2,5))
rpoibin(m=2,pp=pp,wts=rep(2,5))
```

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poibin *The Poisson Binomial Distribution.*

Description

The cdf, pmf, quantile function, and random number generation for the Poisson binomial distribution.

Usage

```
ppoibin(kk, pp, method = "DFT-CF",wts=NULL)
dpoibin(kk, pp,wts=NULL)
qpoibin(qq, pp,wts=NULL)
rpoibin(m, pp,wts=NULL)
```

Arguments

kk	The values where the cdf or pmf to be evaluated.
pp	The vector for p_j's which are the sucess probabilities for indicators.
method	"DFT-CF" for the DFT-CF method, "RF" for the recursive formula, "RNA" for the refined normal approximation, "NA" for the normal approximation, and "PA" for the Poisson approximation.
wts	The weights for p_j's.
qq	The values where the quantile function to be evaluated.
m	The number of random numbers to be generated.

Details

See the reference for computational details.

Value

Returns the entire cdf, pmf, quantiles, and random numbers.

Author(s)

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References

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ppoibin(kk=kk, pp=pp, method = "NA",wts=rep(2,5))
ppoibin(kk=kk, pp=pp, method = "PA",wts=rep(2,5))
dpoibin(kk=kk, pp=pp,wts=rep(2,5))
qpoibin(qq=0:10/10,pp=pp,wts=rep(2,5))
rpoibin(m=2,pp=pp,wts=rep(2,5))
```

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