

# Package ‘BlythStillCasellaCI’

October 11, 2019

**Title** Blyth-Still-Casella Exact Binomial Confidence Intervals

**Version** 1.0.0

**Description** Computes Blyth-Still-Casella exact binomial confidence intervals based on a refining procedure proposed by George Casella (1986) <doi:10.2307/3314658>.

**Depends** R (>= 3.2.0)

**License** GPL-3

**RoxygenNote** 6.1.1

**Encoding** UTF-8

**NeedsCompilation** no

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**Repository** CRAN

**Date/Publication** 2019-10-11 10:30:06 UTC

## R topics documented:

blyth.still.casella	1
<b>Index</b>	<b>3</b>

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blyth.still.casella *Blyth-Still-Casella exact binomial confidence intervals*

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### Description

computes the Blyth-Still-Casella exact binomial confidence intervals based on a refining procedure proposed by George Casella (1986).

### Usage

```
blyth.still.casella(n, X = NULL, alpha = 0.05, digits = 2,  
  CIs.init = NULL, additional.info = FALSE)
```

**Arguments**

n	number of trials
X	number of successes (optional)
alpha	confidence level = 1 - alpha
digits	number of significant digits after the decimal point
CIs.init	initial confidence intervals from which the refinement procedure begins (default starts from Clopper-Pearson confidence intervals)
additional.info	additional information about the types of interval endpoints and their possible range is provided if TRUE (default = FALSE)

**Value**

If X is specified, the corresponding confidence interval will be returned, otherwise a list of  $n + 1$  confidence intervals will be returned.

If `additional.info = FALSE`, only a list of confidence interval(s) will be returned. For any coincidental endpoint, midpoint of its range will be displayed.

If `additional.info = TRUE`, the following lists will be returned:

CI	a list of confidence intervals
coinc.index	indices of coincidental lower endpoints (L.Index) and their corresponding upper endpoints (U.index)
endpoint.type	whether the endpoint is coincidental (C) or non-coincidental (NC)
range	range for each endpoint

**Examples**

```
# to obtain 95% CIs for n = 30 and X = 0 to 30
blyth.still.casella(n = 30, alpha = 0.05, digits = 4)

# to obtain 90% CIs, endpoint types, indices of coincidental endpoints (if any),
# and range of each endpoint for n = 30 and X = 23
blyth.still.casella(n = 30, X = 23, alpha = 0.05, digits = 4, additional.info = TRUE)

# use initial confidence intervals defined by the user instead of Clopper-Pearson CIs
# CIs.input needs to be a (n + 1) x 2 matrix with sufficient coverage
CIs.input <- matrix(c(0,1), nrow = 11, ncol = 2, byrow = TRUE) # start with [0,1] intervals
blyth.still.casella(n = 10, alpha = 0.05, digits = 4, CIs.init = CIs.input, additional.info = TRUE)

# use summary function to see the range for each endpoint
output <- blyth.still.casella(n = 5, alpha = 0.1, digits = 4, additional.info = TRUE)
summary(output)
```

# Index

blyth.still.casella, 1