

# Package ‘regsubseq’

July 23, 2025

**Type** Package

**Title** Detect and Test Regular Sequences and Subsequences

**Version** 0.12

**Date** 2014-03-06

**Author** Yanming Di

**Maintainer** Yanming Di<diy@stat.oregonstate.edu>

**Description** For a sequence of event occurrence times, we are interested in finding subsequences in it that are too “regular”. We define regular as being significantly different from a homogeneous Poisson process. The departure from the Poisson process is measured using a L1 distance. See Di and Perlman 2007 for more details.

**License** GPL-2

**Depends** R (>= 2.10)

**NeedsCompilation** no

**Repository** CRAN

**Date/Publication** 2014-03-09 19:18:52

## Contents

qtables . . . . .	2
test.gaplin . . . . .	2
test.lin . . . . .	3

<b>Index</b>	<b>6</b>
--------------	----------

---

 qtables

*Quantile Tables of the Linearity/Gap-Linearity Tests*


---

**Description**

The data set provide quantile tables for the linearity/gap-linearity test statistics for  $N=2, \dots, 50$  and  $k=2, \dots, N$ , for each  $N$ . These tables will be used to compute p-values corresponding to test statistics.

**Usage**

```
qtables
```

**Format**

R rda files. Within each quantile table, the first row indicates at which probability values the quantiles are computed.

---

 test.gaplin

*Detect and Test Almost Gap-Linear Subsequences.*


---

**Description**

`test.gaplin.t` find the most almost gap-linear length  $k+1$  subsequence of a given sequence and compute the almost gap-linearity test statistic for this subsequence. `test.gaplin.p` compute the p-value corresponding to a computed test statistic. `test.gaplin` compute the test statistics and the p-values for subsequences of all lengths.

**Usage**

```
test.gaplin(Tn);
test.gaplin.t(Tn, k);
test.gaplin.p(t, n, k);
```

**Arguments**

Tn	A sequence of numbers. Currently, only support sequence of length less than 50.
k	The length of the subsequences for which we want to test for almost gap-linearity.
n	The length of the sequence for which we want to test for subsequence almost gap-linearity.
t	Test statistic computed for a length $k+1$ subsequence of a length $n+1$ sequence.

**Details**

Almost gap-linear means the spacings of a subsequence are almost in proportion to the spacings of the corresponding indices. For example, for  $T_n=c(11, 14, (.), 20)$ , the subsequence (11, 14, 20) is gap-linear, since the spacings (3, 6) is in proportion with the spacings of the corresponding indices (1, 2). Equivalently, almost gap-linearity can be measured by the distance between the standardized spacings of the subsequence and the standardized spacings of the corresponding indices. See Di and Perlman (2007) for more details.

**Value**

`test.gaplin.t` returns the most gap-linear length  $k+1$  subsequence of the input sequence and corresponding almost gap-linearity test statistic. `test.gaplin.p` returns the p-value corresponding to the input test statistic `t`. `test.lin` has no return value, instead, a table containing the most almost gap-linear subsequences, corresponding test statistics and p-values will be outputted.

**Author(s)**

Yanming Di

**References**

Di and Perlman, 2007

**See Also**

[test.lin](#).

**Examples**

```
## A sequence representing arrival times of events.
Tn = c(13, 21, 24, 33, 40, 55, 59, 63, 72, 85, 87);

## Test for almost linearity.
t = test.gaplin.t(Tn, 4);
print(t$sub);
p = test.gaplin.p(t$t, 10, 4);
print(p);
test.gaplin(Tn);
```

---

test.lin

*Detect and Test Almost Linear Subsequences.*

---

**Description**

`test.lin.t` find the most almost-linear length  $k+1$  subsequence of a given sequence and compute the almost-linearity test statistic for this subsequence. `test.lin.p` compute the p-value corresponding to a computed test statistic. `test.lin` compute the test statistics and the p-values for subsequences of all lengths.

## Usage

```
test.lin(Tn);  
test.lin.t(Tn, k);  
test.lin.p(t, n, k);
```

## Arguments

Tn	A sequence of numbers. Currently, only support sequences of length less than 50.
k	The length of the subsequences for which we want to test for almost-linearity.
n	The length of the sequence for which we want to test for subsequence almost-linearity.
t	Test statistic computed for a length k+1 subsequence of a length n+1 sequence.

## Details

Almost-linear means the spacings of the sequence are almost equal, or the distance between the standardized spacings as a vector and  $(1/k, \dots, 1/k)$  is too small. The p-value is computed by comparing the test statistic to a precomputed test statistic quantile table. See Di and Perlman (2007) for more details.

## Value

`test.lin.t` returns the most linear length k+1 subsequence of the input sequence and corresponding almost-linearity test statistic. `test.lin.p` returns the p-value corresponding to the input test statistic `t`. `test.lin` has no return value, instead, a table containing the most almost linear subsequences, corresponding test statistics and p-values will be outputted.

## Author(s)

Yanming Di

## References

Di and Perlman, 2007

## See Also

[test.gaplin](#).

## Examples

```
## A sequence representing arrival times of events.  
Tn = c(13, 21, 24, 33, 40, 55, 59, 63, 72, 85, 87);  
  
## Test for almost linearity.  
t = test.lin.t(Tn, 4);  
print(t$sub);  
p = test.lin.p(t$t, 10, 4);
```

*test.lin*

5

```
print(p);  
test.lin(Tn);
```

# Index

## \* datasets

qtables, 2

## \* htest

test.gaplin, 2

test.lin, 3

q.testgaplin.n10 (qtables), 2  
q.testgaplin.n11 (qtables), 2  
q.testgaplin.n12 (qtables), 2  
q.testgaplin.n13 (qtables), 2  
q.testgaplin.n14 (qtables), 2  
q.testgaplin.n15 (qtables), 2  
q.testgaplin.n16 (qtables), 2  
q.testgaplin.n17 (qtables), 2  
q.testgaplin.n18 (qtables), 2  
q.testgaplin.n19 (qtables), 2  
q.testgaplin.n2 (qtables), 2  
q.testgaplin.n20 (qtables), 2  
q.testgaplin.n21 (qtables), 2  
q.testgaplin.n22 (qtables), 2  
q.testgaplin.n23 (qtables), 2  
q.testgaplin.n24 (qtables), 2  
q.testgaplin.n25 (qtables), 2  
q.testgaplin.n26 (qtables), 2  
q.testgaplin.n27 (qtables), 2  
q.testgaplin.n28 (qtables), 2  
q.testgaplin.n29 (qtables), 2  
q.testgaplin.n3 (qtables), 2  
q.testgaplin.n30 (qtables), 2  
q.testgaplin.n31 (qtables), 2  
q.testgaplin.n32 (qtables), 2  
q.testgaplin.n33 (qtables), 2  
q.testgaplin.n34 (qtables), 2  
q.testgaplin.n35 (qtables), 2  
q.testgaplin.n36 (qtables), 2  
q.testgaplin.n37 (qtables), 2  
q.testgaplin.n38 (qtables), 2  
q.testgaplin.n39 (qtables), 2  
q.testgaplin.n4 (qtables), 2  
q.testgaplin.n40 (qtables), 2

q.testgaplin.n41 (qtables), 2  
q.testgaplin.n42 (qtables), 2  
q.testgaplin.n43 (qtables), 2  
q.testgaplin.n44 (qtables), 2  
q.testgaplin.n45 (qtables), 2  
q.testgaplin.n46 (qtables), 2  
q.testgaplin.n47 (qtables), 2  
q.testgaplin.n48 (qtables), 2  
q.testgaplin.n49 (qtables), 2  
q.testgaplin.n5 (qtables), 2  
q.testgaplin.n50 (qtables), 2  
q.testgaplin.n6 (qtables), 2  
q.testgaplin.n7 (qtables), 2  
q.testgaplin.n8 (qtables), 2  
q.testgaplin.n9 (qtables), 2  
q.testlin.n10 (qtables), 2  
q.testlin.n11 (qtables), 2  
q.testlin.n12 (qtables), 2  
q.testlin.n13 (qtables), 2  
q.testlin.n14 (qtables), 2  
q.testlin.n15 (qtables), 2  
q.testlin.n16 (qtables), 2  
q.testlin.n17 (qtables), 2  
q.testlin.n18 (qtables), 2  
q.testlin.n19 (qtables), 2  
q.testlin.n2 (qtables), 2  
q.testlin.n20 (qtables), 2  
q.testlin.n21 (qtables), 2  
q.testlin.n22 (qtables), 2  
q.testlin.n23 (qtables), 2  
q.testlin.n24 (qtables), 2  
q.testlin.n25 (qtables), 2  
q.testlin.n26 (qtables), 2  
q.testlin.n27 (qtables), 2  
q.testlin.n28 (qtables), 2  
q.testlin.n29 (qtables), 2  
q.testlin.n3 (qtables), 2  
q.testlin.n30 (qtables), 2  
q.testlin.n31 (qtables), 2

q.testlin.n32 (qtables), 2  
q.testlin.n33 (qtables), 2  
q.testlin.n34 (qtables), 2  
q.testlin.n35 (qtables), 2  
q.testlin.n36 (qtables), 2  
q.testlin.n37 (qtables), 2  
q.testlin.n38 (qtables), 2  
q.testlin.n39 (qtables), 2  
q.testlin.n4 (qtables), 2  
q.testlin.n40 (qtables), 2  
q.testlin.n41 (qtables), 2  
q.testlin.n42 (qtables), 2  
q.testlin.n43 (qtables), 2  
q.testlin.n44 (qtables), 2  
q.testlin.n45 (qtables), 2  
q.testlin.n46 (qtables), 2  
q.testlin.n47 (qtables), 2  
q.testlin.n48 (qtables), 2  
q.testlin.n49 (qtables), 2  
q.testlin.n5 (qtables), 2  
q.testlin.n50 (qtables), 2  
q.testlin.n6 (qtables), 2  
q.testlin.n7 (qtables), 2  
q.testlin.n8 (qtables), 2  
q.testlin.n9 (qtables), 2  
qtables, 2

test.gaplin, 2, 4  
test.lin, 3, 3