

# Package ‘smirnov’

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**Type** Package

**Title** Provides two taxonomic coefficients from E. S. Smirnov  
``Taxonomic analysis" (1969) book

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**Description** This tiny package contains one function `smirnov()` which calculates two scaled taxonomic coefficients, `Txy` (coefficient of similarity) and `Txx` (coefficient of originality). These two characteristics may be used for the analysis of similarities between any number of taxonomic groups, and also for assessing uniqueness of giving taxon. It is possible to use `smirnov()` output as a distance measure: convert it to distance by `as.dist(1 - smirnov(x))`.

**License** GPL (>= 2)

**LazyLoad** yes

**Repository** CRAN

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**NeedsCompilation** no

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smirnov

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## Description

Provides two taxonomic coefficients from E. S. Smirnov "Taxonomic analysis" (1969) book

## Usage

```
smirnov(x)
```

## Arguments

`x` is a binary (absence-presence matrix) where taxa are rows and characters are columns.

## Details

Function will remove all non-informative characters (e.g., columns of all zeroes) and transform every value greater than 1 to 1 (in order to avoid non-binary matrices).

Please note that function will calculate scaled coefficients `Txx` and `Txy` instead of their unscaled variants (`txx` and `txy`): see the chapter 11 of Smirnov's (1969) book.

## Value

Rectangular matrix where diagonal is filled with `Txx` coefficients and other cells with `Txy` coefficients. To convert this matrix to similarity matrix, diagonal should be filled with ones. To convert output to "normal" dissimilarity matrix, use `"as.dist(1-smirnov(x))"`.

## Author(s)

Alexey Shipunov

## References

Smirnov, E. S. 1969. Taxonomical analysis. Moscow, Moscow University Publishers. [in Russian].

## See Also

[dist](#)

## Examples

```
# Example (21) from p. 45 of Smirnov's book:
s1 <- c(0,1,0,1,0,1,0,1,0,1,1,0,1,0,0)
s2 <- c(0,1,0,1,0,1,1,0,1,0,0,1,0,1,0)
s3 <- c(1,0,1,0,1,0,0,1,0,1,0,1,0,0,1)
smirnov(rbind(s1, s2, s3))
# s3 is most original; s1 and s2 are more similar than other pairs
```

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