

# Package ‘nparsurv’

October 13, 2022

**Title** Nonparametric Tests for Main Effects, Simple Effects and Interaction Effect in a Factorial Design with Censored Data

**Description** Nonparametric Tests for Main Effects, Simple Effects and Interaction Effect with Censored Data and Two Factorial Influencing Variables.

**Version** 0.1.0

**Depends** R (>= 3.2.5)

**Imports** survival (>= 2.38-3), TH.data(>= 1.0-7)

**License** GPL-2

**LazyData** TRUE

**RoxygenNote** 5.0.1

**NeedsCompilation** no

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**Repository** CRAN

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nparsurv_test	<i>Nonparametric Tests for Main Effects, Simple Effects and Interaction Effect in a Two-Factorial Design with Censored Data</i>
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## Description

The nparsurv\_test function calculates the test statistics and the p-values as described in ‘Nonparametric Methods for Factorial Designs with Censored Data’ by Akritas and Brunner.

**Usage**

```
nparsurv_test(data)
```

**Arguments**

**data** A `data.frame` of the form (time, status, factorA, factorB)  
**time:** time of event or censoring, numeric  
**status:** indicator for censoring, 1=event, 0=censored, integer  
**factorA:** first factor variable, factor  
**factorB:** second factor variable, factor  
 Missing values must be saved as NA.

**Details**

The package provides tests for a survival setting with two influencing variables, that are factors with at least two levels each. Details are shown in 'Nonparametric Methods for Factorial Designs with Censored Data' by Akritas and Brunner. The `nparsurv_test` function returns the values of the five test statistics: the tests for main effects, simple effects and the interaction effect. Additionally, based on the asymptotic chi-square distribution of the test statistic under the null hypothesis, p-values are computed.

**Value**

A `nparsurv_test` object containing the following components:

`maineffectA` / `maineffectB`

The test statistic and p-value for the null hypotheses 'no main effect of factor A' and 'no main effect of factor B' respectively.

`simpleeffectA` / `simpleeffectB`

The test statistic and p-value for the null hypotheses 'no simple effect of factor A' and 'no simple effect of factor B' respectively.

`interactioneffect`

The test statistic and p-value for the null hypothesis 'no interaction effect between factor A and factor B'.

**References**

Michael G. Akritas, Edgar Brunner(1997). Nonparametric Methods for Factorial Designs with Censored Data. *Journal of the American Statistical Association*.

**Examples**

```
data_ovarian<-data.frame(survival::ovarian$futime,
                        survival::ovarian$fustat,
                        as.factor(survival::ovarian$resid.ds),
                        as.factor(survival::ovarian$rx))
nparsurv_test(data_ovarian)
```

```
data_GBSG2<-data.frame(TH.data::GBSG2$time,  
                       TH.data::GBSG2$cens,  
                       TH.data::GBSG2$tgrade,  
                       TH.data::GBSG2$horTh)  
nparsurv_test(data_GBSG2)
```

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