

R documentation

of 'man/MSOpt.Rd'

September 30, 2021

MSOpt

MSOpt

Description

The MSOpt function creates a list object containing the main information on the experiment settings (e.g. number of factors, factor levels, number of runs, units per stratum) and the optimization criteria to be considered (number and names). According to the declared criteria, it also provides the basic matrices for their implementation. MSOpt returns input objects of the [Score](#) and [MSSearch](#) functions of the multiDoE package.

Usage

```
MSOpt(facts, units, levels, etas, criteria, model)
```

Arguments

facts	A list of vectors representing the distribution of factors across strata. Each item in the list represents a stratum and the first item is the highest stratum of the multi-stratum structure of the experiment. Within the vectors, experimental factors are indicated by progressive integer from 1 to the total number of experimental factors, starting from the highest strata. Blocking factors are denoted by empty vectors.
units	A list containing the number of units in each stratum (e.g. in a split-plot experiment with <i>h</i> whole plots and <i>k</i> subplots per whole plot: <code>units = list(h,k)</code>). It follows that <code>length(units)</code> must be equal to <code>length(facts)</code> .
levels	A vector or an integer. If the number of levels differs from factor to factor, levels is a vector containing the number of available levels for each experimental factor (blocking factors are excluded). If all the experimental factors share the number of levels, one integer is sufficient.
etas	A list specifying the ratios of error variance between subsequent strata. It follows that <code>length(etas)</code> must be equal to <code>length(facts) - 1</code> .
criteria	A list containing the criteria to be optimized. It can contain any combination of: <ul style="list-style-type: none">• "I": I-optimality• "Id": Id-optimality

- "D": D-optimality
- "Ds": Ds-optimality
- "A": A-optimality
- "As": As-optimality

See the **Details** section for more detailed information on the available criteria.

model A string which indicates the type of model, among "main", "interaction" and "quadratic".

Details

In order to... Generalized least square estimator:

$$F_n = \frac{\phi^n - \psi^n}{\sqrt{5}}.$$

- I-optimality:
- "Id" Id-optimality
- "D" D-optimality
- "Ds" Ds-optimality
- "A" A-optimality
- "As" As-optimality

Value

MSOpt returns a list, whose elements are: **facts** The argument **facts**. **\item nfacts** - An integer indicating the number of experimental factors. **\item nstrat** - An integer indicating the number of strata. **\item units** - The argument **units**. **\item runs** - An integer representing the number of runs. **\item etas** - The argument **etas**. **\item avlev** - A list showing the available levels for each experimental factor. **\item levs** - A vector showing the number of levels for each experimental factor. **\item Vinv** - The inverse of the variance-covariance matrix of the responses. **\item model** - The argument **model**. **\item crit** - The argument **criteria**. **\item ncrit** - An integer indicating the number of criteria. **\item M** - The matrix of moments of the cube. Only with *I-optimality* criteria. **\item M0** - The matrix of moments of the cube. Only with *Id-optimality* criteria. **\item W** - The diagonal matrix of weights. Only with *As-optimality* criteria.

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