R documentation

of 'man/MSOpt.Rd'

October 1, 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 h *whole plots* and k *subplots* per whole plot: `units = list(h,k)`). It follows that `length(units)` must be equal to `length(facts)`.

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 `length(etas)` must be equal to `length(facts)` -1.

criteria
: A list containing the criteria to be optimized. It can contain any combination of:

  - "I" : I-optimality
  - "Id" : Id-optimality

1

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

See the **Details** section for more detailed information on the available criteria. The details of model specification are given under 'Details'.

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

Value

MSOpt returns a list containing the following components:

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

Index