

Package ‘factoptd’

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Title Factorial Optimal Designs for Two-Colour cDNA Microarray Experiments

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Depends R (>= 3.4.0), MASS, partitions

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Description

Computes factorial A-, D- and E-optimal designs for two-colour cDNA microarray experiments.

NeedsCompilation no

Repository CRAN

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factoptd	<i>Factorial optimal designs for two-colour cDNA microarray experiments</i>
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Description

Used to compute factorial A-, D- or E-optimal designs for two-colour cDNA microarray experiments.

Usage

```
factoptd(narys, Optcrit = "", desvect,...)
```

```
## Default S3 method:
factoptd(narys, Optcrit = "", desvect,...)
## S3 method for class 'factoptd'
print(x, ...)
```

Arguments

narys	integer, specifying number of arrays.
desvect	matrix, specifying design vectors (see Debusho, Haines and Gemechu (2014) for more details).
Optcrit	character, specifying the optimality criteria to be used. Optcrit takes the letter "A", "D" and "E" for factorial A-, D- and E-optimal designs, respectively.
x	the object to be printed.
...	not used.

Details

factoptd computes factorial optimal designs for the two-colour cDNA microarray experiments for a given design vectors and number of arrays by making use to the complete enumeration methods proposed in Debusho, Haines and Gemechu (2014).

Value

Returns resultant factorial A-, D- or E-optimal design(s) with their corresponding score value. Specifically:

call	the method call.
b	number of arrays.
desvect	Design vectors
Optcrit	optimality criteria.
tnfd	Total number of resultant optimal factorial design(s)
optfctd	obtained factorial optimal design. Each row of optfctd represents different designs allocation/"frequency" vectors.
optscv	score value of the optimality criteria 'Optcrit' of the resultant factorial optimal design(s), 'optfctd'.

NB: The function factoptd also saves the summary of the resultant factorial optimal design(s) in .csv format in the R session's temporary directory.

Author(s)

Dibaba Bayisa Gemechu, Legesse Kassa Debusho, and Linda Haines

References

Debushe, L. K., Gemechu, D. B. and Haines, L. M. (2014). Optimal Factorial Designs for Two-Colour Microarray Experiments: Properties Of Admissible Designs, A-, D- And E-Optimality Criteria. Peer-reviewed Proceedings of the Annual Conference of the South African Statistical Association for 2014 (SASA 2014), Rhodes University, Grahamstown, South Africa. pp 17 - 24, ISBN: 978-1-86822-659-7.

Examples

```
##To obtain factorial A-optimal design for a given
##design vector using 9 slides/arrays, set

narys <- 9 #Number of arrays

desvect = rbind(c(0,2,-2),c(-2,0,-2),
               c(-2,2,0),c(0,2,2),
               c(-2,0,2),c(-2,-2,0)) #Design vector

Optcrit <- "A" #Optimality criteria

factoptdA <- factoptd(narys = 9, Optcrit = "A", desvect =
                    rbind(c(0,2,-2),c(-2,0,-2),c(-2,2,0),c(0,2,2),c(-2,0,2),c(-2,-2,0)))

print(factoptdA)
```

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