Package 'mxkssd'

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Title Efficient Mixed-Level k-Circulant Supersaturated Designs

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Depends R(>= 2.13.0)

Description Generates efficient balanced mixed-level k-circulant supersaturated designs by interchanging the elements of the generator vector. Attempts to generate a supersaturated design that has EfNOD efficiency more than user specified efficiency level (mef). Displays the progress of generation of an efficient mixed-level k-circulant design through a progress bar. The progress of 100 per cent means that one full round of interchange is completed. More than one full round (typically 4-5 rounds) of interchange may be required for larger designs. For more details, please see Mandal, B.N., Gupta V. K. and Parsad, R. (2011). Construction of Efficient Mixed-Level k-Circulant Supersaturated Designs, Journal of Statistical Theory and Practice, 5:4, 627-648, <doi:10.1080/15598608.2011.10483735>.

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mxkssd *Efficient mixed-level k-circulant supersaturated designs*

Description

mxkssd is a package that generates efficient balanced mixed-level k-circulant supersaturated designs by interchanging the elements of the generator vector. The package tries to generate a supersaturated design that has EfNOD efficiency more than user specified efficiency level (mef). The package also displays the progress of generation of an efficient mixed-level k-circulant design through a progress bar. The progress of 100 per cent means that one full round of interchange is completed. More than one full round (typically 4-5 rounds) of interchange may be required for larger designs.

Usage

```
mxkssd(m,n,level_vec,k,mef)
```

Arguments

`m`	number of factors
`n`	number of runs
`level_vec`	level vector containing the levels of the factors such that (n-1) factors have each of these levels
`k`	order of circulation
`mef`	minimum efficiency required, should be between 0 to 1

Value

A list containing following items

`m`	number of factors
`n`	number of runs
`level_vec`	level vector containing the levels of the factors such that (n-1) factors have each of these levels
`k`	order of circulation
`generator.vector`	generator vector
`design`	design
`EfNOD.efficiency`	EfNOD efficiency
`max.fNOD`	maximum fNOD
`time.taken`	time taken to generate the design
`number.aliased.pairs`	number of aliased pairs of columns

Author(s)

B N Mandal

References

B. N. Mandal, V. K. Gupta & Rajender Parsad (2011) Construction of Efficient Mixed-Level k-Circulant Supersaturated Designs, Journal of Statistical Theory and Practice, 5:4, 627-648, DOI: 10.1080/15598608.2011.10483735

Examples

```
##To generate an efficient mixed level 2-circulant supersaturated design
#with 8 runs and 14 factors such that 7 factors have number of levels 2 and
#another 7 factors have number of levels 4. So the level_vec is c(2,4).
#The required minimum efficiency is 1.
mxkssd(14,8,c(2,4),2,1)
```

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