# Package 'mxkssd'

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**Version** 1.2

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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>.

**License** GPL (>= 2)

**NeedsCompilation** no

**Repository** CRAN

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# R topics documented:

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

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**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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