Package 'slr'

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Title Semi-Latin Rectangles

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Depends R (>= 4.3.0)

Imports MASS, ibd, gmp

Description A facility to generate balanced semi-Latin rectangles with any cell size (preferably up to ten) with given number of treatments, see Uto, N.P. and Bailey, R.A. (2020). ``Balanced Semi-Latin rectangles: properties, existence and constructions for block size two''. Journal of Statistical Theory and Practice, 14(3), 1-11, <doi:10.1007/s42519-020-00118-3>. It also provides facility to generate partially balanced semi-Latin rectangles for cell size 2, 3 and 4 for any number of treatments.

Note This package is developed as part of ongoing Ph.D (Agricultural Statistics) thesis research work of first author at ICAR-Indian Agricultural Statistics Research Institute, New Delhi, India.

License GPL (>= 2)

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`bslr` *Balanced semi-Latin rectangles for given number of treatments and cell size*

Description

This function generates a balanced semi-Latin rectangles for given number of treatments and cell size

Usage

```
bslr(v, k)
```

Arguments

`v`	number of treatments
`k`	cell size, preferably up to 10

Value

`design`	(Balanced semi-Latin rectangle of cell size k for v treatments
`Avg.Effi`	Average efficiency of the design

Author(s)

Kaushal Kumar Yadav <kaushalyadav0796@gmail.com>

Examples

```
bslr(5, 2)
bslr(7, 3)
```

`bslr.even` *Balanced semi-Latin rectangles for given cell size and even number of treatments*

Description

This function generates a balanced semi-Latin rectangles for given cell size and even number of treatments

Usage

```
bslr.even(v, k)
```

Arguments

v	number of treatments and is even
k	cell size, preferably up to 10

Value

design	(Balanced semi-Latin rectangle of cell size two for v treatments
Avg.Effi	Average efficiency of the design

Author(s)

Sukanta Dash <sukanta.dash@icar.gov.in>

Examples

```
bslr.even(4,2)
```

---

bslr.gen *Balanced semi-Latin rectangles for given number of treatments and cell size*

Description

This function generates a balanced semi-Latin rectangles for given number of treatments and cell size

Usage

```
bslr.gen(v, k)
```

Arguments

v	number of treatments
k	cell size, preferably up to 10

Value

design	(Balanced semi-Latin rectangle of cell size k with v treatments
Avg.Effi	Average efficiency of the design

Author(s)

Kaushal Kumar Yadav <kaushalyadav0796@gmail.com>

Examples

```
bslr.gen(7, 4)
```

bslr.odd *Balanced semi-Latin rectangles of for given cell size and odd number of treatments*

Description

This function generates a partially balanced semi-Latin rectangles for given cell size and odd number of treatments

Usage

```
bslr.odd(v,k)
```

Arguments

v	number of treatments and is odd
k	cell size, prerably up to 10

Value

design	(Balanced semi-Latin rectangle of cell size two for v treatments
Avg.Effi	Average efficiency of the design

Author(s)

Kaushal Kumar Yadav <kaushalyadav0796@gmail.com>

Examples

```
bslr.odd(5,2)
```

pbslr *Partially balanced semi-Latin rectangles of cell size two, three and four*

Description

This function generates a partially balanced semi-Latin rectangles of cell size two, three and four

Usage

```
pbslr(v,k)
```

Arguments

v	number of treatments
k	cell size, 2, 3 or 4 is supported.

Value

design	(Partially balanced semi-Latin rectangle of cell size two, three or four for v treatments
Avg.Effi	Average efficiency of the design

Author(s)

Rajender Parsad <rajender.parsad@icar.gov.in>

Examples

```
pbslr(5, 2)
pbslr(6, 3)
```

---

pbslr.even *Partially balanced semi-Latin rectangles of cell size two, three and four for even number of teratments*

Description

This function generates a partially balanced semi-Latin rectangles of cell size two, three and four for even number of treatments

Usage

```
pbslr.even(v,k)
```

Arguments

v	number of treatments and is even
k	cell size, 2, 3 and 4 is supported

Value

design	(Partially balanced semi-Latin rectangle of cell size two, three and four for v treatments for even number of treatments
Avg.Effi	Average efficiency of the design

Author(s)

Baidya Nath Mandal <mandal.stat@gmail.com>

Examples

```
pbslr.even(4,2)
pbslr.even(6,4)
```

`pbslr.odd` *Partially balanced semi-Latin rectangles of cell size two and three for odd number of teratments*

Description

This function generates a partially balanced semi-Latin rectangles of cell size two and three for odd number of treatments

Usage

```
pbslr.odd(v,k)
```

Arguments

`v`	number of treatments and is odd
`k`	cell size. Either 2 or 3 is supported

Value

`design`	(Partially balanced semi-Latin rectangle of cell size two for v treatments for odd number of treatments
`Avg.Effi`	Average efficiency of the design

Author(s)

Baidya Nath Mandal <mandal.stat@gmail.com>

Examples

```
pbslr.odd(5,2)
```

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