

Package ‘SobolSequence’

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Type Package

Title Sobol Sequences with Better Two-Dimensional Projections

Version 1.0

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Description R implementation of S. Joe and F. Y. Kuo(2008)
<[DOI:10.1137/070709359](https://doi.org/10.1137/070709359)>.
The implementation is based on the data file new-joe-kuo-6.21201
<<http://web.maths.unsw.edu.au/~fkuo/sobol/>>.

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Imports Rcpp (>= 0.12.9)

LinkingTo Rcpp

Suggests knitr, rmarkdown, testthat

VignetteBuilder knitr

URL <http://web.maths.unsw.edu.au/~fkuo/sobol/>

RoxygenNote 6.0.1

NeedsCompilation yes

Repository CRAN

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SobolSequence-package *Sobol Sequence*

Description

R implementation of S. Joe and F. Y. Kuo, "Constructing Sobol sequences with better two-dimensional projections", SIAM J. Sci. Comput. 30, 2635-2654 (2008).

Details

The implementation is based on the data file new-joe-kuo-6.21201 <<http://web.maths.unsw.edu.au/~fkuo/sobol/>>. Porting to R by Mutsuo Saito. The R version does not returns coordinate value zero, but returns value very near to zero, 2^{-64} .

Acknowledgments

I, Mutsuo Saito, wish to thank Frances Kuo and Stephen Joe for their research, and agreement to use thier source code.

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Reference

S. Joe and F. Y. Kuo, "Constructing Sobol sequences with better two-dimensional projections", SIAM J. Sci. Comput. 30, 2635-2654 (2008).

Examples

```
srange <- sobolSequence.dimMinMax()
mrange <- sobolSequence.dimF2MinMax(srange[1])
points <- sobolSequence.points(dimR=srange[1], dimF2=mrange[1], count=10000)
points <- sobolSequence.points(dimR=srange[1], dimF2=mrange[1], count=10000,
                              digitalShift=TRUE)
```

sobolSequence.dimF2MinMax

get minimum and maximum F2 dimension number.

Description

get minimum and maximum F2 dimension number.

Usage

```
sobolSequence.dimF2MinMax(dimR)
```

Arguments

dimR dimation.

Value

supportd minimum and maximum F2 dimension number.

sobolSequence.dimMinMax

get minimum and maximum dimension number of Sobol Sequence

Description

get minimum and maximum dimension number of Sobol Sequence

Usage

sobolSequence.dimMinMax()

Value

supportd minimum and maximum dimension number.

sobolSequence.points *get points from SobolSequence*

Description

This R version does not returns cordinate value zero, but returns value very near to zero, 2^{-64} .

Usage

sobolSequence.points(dimR, dimF2 = 10, count, digitalShift = FALSE)

Arguments

dimR dimation.
dimF2 F2-dimation of each element.
count number of points.
digitalShift use digital shift or not.

Value

matrix of points where every row contains dimR dimensional point.

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