

Construction and Analysis of Partially Balanced Sudoku Design of Prime Order

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Abstract : Sudoku squares have been widely used to design an experiment where each treatment occurs exactly once in each row, column or sub-block. For some experiments, the size of row (or column or sub-block) may be larger than the number of treatments. Since each treatment appears only once in each row (column or sub-block) with an additional empty cell such designs are partially balanced Sudoku designs (PBSD) with NP-complete structures. This paper proposed methods for constructing PBSD of prime order of treatments by a modified Kronecker product and swap of matrix row (or column) in cyclic order. In addition, linear model and procedure for the analysis of data for PBSD are proposed.

Keywords : sudoku design, partial sudoku, NP-complete, Kronecker product, row and column swap

Conference Title : ICSRD 2020 : International Conference on Scientific Research and Development

Conference Location : Chicago, United States

Conference Dates : December 12-13, 2020