



Constraints and Restraints in Analysis and Design of Experiments with the Roles Defined Algebraically in Detail

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A prominence of General Linear Model (GLM) procedure of the SAS/STAT (R) software is the feasibility to be adapted to a variety of factorial arrangements, even to a crossed many-factorial one such that not only involving a cell or cells as of missing or plural runs, but also such that a cell or cells omitted or purified in the framework, namely, adapted to the arrangement impaired or extended. Indeterminacy of solutions of the observation equation may be met with special solutions such as of Type I, II, III or IV as typified arbitrarily. Another possible way is such that the design matrix is to be augmented and/or lessened by constraints and/or restraints to secure a well-defined determinacy of the solutions and also with the algebraically linear orthogonality of the solutions, establishing a unified and general scheme of simultaneous analysis of response and variance.

Key Words: Factorial design of experiments and the analysis, Design matrix of General Linear Model (GLM) augmented and/or lessened by constraints and/or restraints