On sufficiency of quadratically sufficient statistics in possibly mixed model

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Abstract

The notion of quadratic sufficiency was introduced and characterized in [1] in the context of fixed linear model. It was proved there that under normality quadratically sufficient statistic is also sufficient. In the paper it is studied the problem of estimation in possibly misspecified model; i.e. when some effects assumed to be fixed are random. It is shown that quadratically sufficient statistic under fixed model it is sufficient under respective mixed linear normal model. The results are applied to provide data reduction in factorial experiment.

Keywords

Linear sufficiency, quadratic sufficiency, mixed model.

References

[1] Mueller, J. (1987). Sufficiency and completeness in the linear model. *Journal of Multivariate Analysis*, 21:312-323.