

Linear and quadratic sufficiency in mixed model

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Abstract

Up to now, see e.g. [3] and [1], linear and quadratic sufficiency have been mainly used in obtaining BLUE and BQUE for models with one variance component.

We use the orthogonal structure of variance-covariance matrix of models with orthogonal block structure to extend the use of linear and quadratic sufficiency, as defined in [2], in obtaining best linear unbiased estimators and best quadratic unbiased estimators.

We will consider the model

$$M_{\sigma} \quad : \quad \mathbf{Y} = \mathbf{X}\beta + \mathbf{X}_1\beta_1 + \varepsilon$$

where β is fixed and β_1 and ε are independent with null mean vectors and variance-covariance matrices $\sigma_1^2\mathbf{I}_{c_1}$ and $\sigma^2\mathbf{I}_n$.

Keywords

Linear sufficiency, Quadratic sufficiency, Variance components, Mixed model.

References

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