Boole algebras of commutative Jordan algebras. Applications to mixed models

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Abstract

Commutative Jordan Algebras (CJA) constituted by symmetric matrices have, see Seely (1971), unique basis constituted by pairwise orthogonal orthogonal projection matrices. This result will be used to build Boolean Algebras constituted by CJA. These new algebras will be useful in

- Characterizing orthogonal mixed models where random effects part segregates itself as a sub-model which enables the obtaining of UMVUE for the variance components once normality is assumed;
- Given an orthogonal model whose treatments nest the treatment of another orthogonal model, to study interaction between sets of factors of the two models.

Keywords

Boole algebras, Commutative Jordan algebras, UMVUE, Mixed models, Variance components.

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