Canonical matrices of bilinear and sesquilinear forms

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Abstract

Canonical matrices are given for

- bilinear forms over an algebraically closed or real closed field;
- sesquilinear forms over an algebraically closed field and over real quaternions with any nonidentity involution; and
- sesquilinear forms over a field $\mathbb{F}$ of characteristic different from 2 with involution (possibly, the identity) up to classification of Hermitian forms over finite extensions of $\mathbb{F}$; the canonical matrices are based on any given set of canonical matrices for similarity over $\mathbb{F}$.

A method for reducing the problem of classifying systems of forms and linear mappings to the problem of classifying systems of linear mappings is used to construct the canonical matrices. This method has its

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