

On the simultaneous triangulability of matrices

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Abstract

Two necessary and sufficient criteria for the simultaneous triangulability of two complex matrices are established. Both of them admit a finite verification procedure. To prove the first criterion, classical theorems from Lie algebra theory are used, and known sufficient conditions of triangulability are also given a natural interpretation in terms of this theory. The other criterion is discussed in the framework of the associative algebras. Here the decisive fact is the Wedderburn theorem on the nilpotence of a finite-dimensional nilalgebra. ©2000 Kluwer Academic/Plenum Publishers.

Keywords

Nilpotent Lie algebra, Simultaneous triangulability, Solvable Lie algebra, Wedderburn theorem