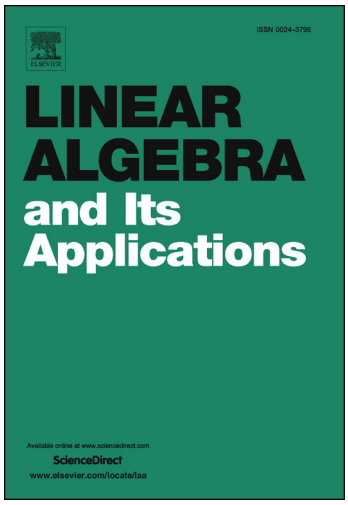

The lattice of characteristic subspaces of an endomorphism with Jordan-Chevalley decomposition

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The lattice of characteristic subspaces of an endomorphism with Jordan-Chevalley decomposition

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Abstract

Given an endomorphism A over a finite dimensional vector space having Jordan-Chevalley decomposition, the lattices of invariant and hyperinvariant subspaces of A can be obtained from the nilpotent part of this decomposition. We extend this result for lattices of characteristic subspaces. We also obtain a generalization of Shoda's Theorem about the characterization of the existence of characteristic non hyperinvariant subspaces.

Keywords: Hyperinvariant subspaces, characteristic subspaces, lattices.
2008 MSC: 06F20, 06D50, 15A03, 15A27.

1. Introduction

The lattice of characteristic subspaces of an endomorphism over a finite dimensional space has been studied in [1, 2, 7, 8], where structural properties of the lattice have been given when the minimal polynomial of the endomorphism splits over the underlying field $\mathbb{F}$. It was proved in ([1]) that only if $\mathbb{F} = GF(2)$, the lattices of characteristic and hyperinvariant subspaces may not coincide. When the minimal polynomial of the endomorphism does not split over $\mathbb{F}$, the

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