
赫尔米特矩阵的性质及运用

摘要

赫尔米特矩阵在数据运算、搜索查找、天文矩阵、数据处理等方面有着广泛的应用，并且有关于赫尔米特矩阵最为基本定理和性质梳理并不全面，因此研究赫尔米特矩阵的性质及其运用就变得格外重要。论文的主要内容是探讨赫尔米特矩阵的各种性质，并且归纳其他赫尔米特矩阵的性质。例如次赫尔米特矩阵，反赫尔米特矩阵。本论文核心便是赫尔米特矩阵及其相关的矩阵进行不等式上的扩展，本文涉及到了华罗庚不等式和其他赫尔米特矩阵最为重要的性质的证明。本课题首先了解什么是赫尔米特矩阵，然后基于次赫尔米特矩阵等其他相关性质，进行相关证明，给出赫尔米特矩阵的判断，在华罗庚不等式中，赫尔米特矩阵又有了更强条件。然后再次基础上讨论赫尔米特矩阵各种判定的证明，最后给出现行数学情况下，对未来的展望。

关键词： 赫尔米特矩阵； 特征值； 酉矩阵； 正定矩阵

The Properties and Applications of Hermite Matrix

Abstract

Hermite matrix has a wide range of applications in data operation, search and search, astronomical matrix, data processing and so on, and there are some basic theorems and properties of Hermite matrix are not comprehensive, so it is very important to study the properties and applications of Hermite matrix. The main content of this paper is to discuss the properties of Hermite matrix and summarize the properties of other Hermite matrix, such as sub Hermitian matrix, anti Hermitian matrix. The core of this paper is to expand the inequalities of Hermite matrix and its related matrices. This paper involves the proof of Hua Luogeng inequality and other most important properties of Hermite matrix. This topic first gives what is Hermitian matrix, and then based on the sub Hermitian matrix and other related properties, carries on the correlation proof and gives the judgment of Hermitian matrix. In the Hua Luogeng inequality, the Hermite matrix has a stronger condition. Then, on the basis of this, we discuss the proofs of various criteria of Hermitian matrix. Finally, we give the prospect of the future in the case of current mathematics.

Keywords: Hermite matrix; eigenvalue; unitary matrix; positive definite matrix

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