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A STUDY OF A NEW PROPERTIES OF HERMITE-HERMITE MATRIX POLYNOMIALS AND THEIR APPLICATIONS

M. S. METWALLY[1] AND A. SHEHATA[2]

[1]Department of Mathematics,
Faculty of Science (Suez), Suez Canal University, Egypt
[2]Department of Mathematics,
Faculty of Science, Assiut University,
Assiut 71516, Egypt

Abstract

The main aim of this paper is introduced to an extension of the Hermite-Hermite matrix polynomials. An explicit representation, some important addition and multiplication properties, a matrix recurrence relation, in particular the three terms recurrence relation for the an extension of the Hermite-Hermite matrix polynomials are given, matrix partial differential equations satisfied them is presented, relationships with Hermite-Hermite and Legendre matrix polynomials of two variable, and some special properties. A new expansions of the matrix functions for a wide class of matrices in terms of generalized Hermite-Hermite matrix polynomials is proposed.

Key Words and Phrases : *Matrix functions, Hermite-Hermite matrix polynomials, Legendre matrix polynomial, Matrix recurrence relation, Hermite-Hermite matrix differential equation.*

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