



Some relations on Hermite-Hermite matrix polynomials

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Abstract:

The main purpose of this paper is to define a new extension of Hermite-Hermite matrix polynomials (HHMP) and derive some properties such as recurrence relations and matrix differential equation for generalized Hermite-Hermite matrix polynomials. We derive addition and multiplication theorem, and summation formula for generalized HHMP. Furthermore, via integral transform, the new families of Chebyshev-Chebyshev, Legendre-Legendre, Chebyshev-Hermite and Legendre-Hermite matrix polynomials are introduced, from which a variety of interesting results follows as special cases.

Keywords:

Matrix functions, Chebyshev-Chebyshev, Legendre-Legendre, Hermite-Hermite, Chebyshev-Hermite, Legendre-Hermite matrix polynomials, Matrix differential equation.

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