Some relations satisfied by Hermite-Hermite matrix polynomials

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Abstract:

The classical Hermite-Hermite matrix polynomials for commutative matrices were first studied by Metwally et al. [M. S. Metwally, M. T. Mohamed and A. Shehata: On Hermite-Hermite matrix polynomials. Math. Bohemica 133 (2008), 421-434]. Our goal is to derive their basic properties including the orthogonality properties and Rodrigues formula for the Hermite-Hermite matrix polynomials has also been investigated. Furthermore, we have defined a new polynomial associated with the Hermite-Hermite matrix polynomials and have established the matrix differential equation associated with these polynomials. We give the addition theorems, multiplication theorems and summation formula for the Hermite-Hermite matrix polynomials. Finally, general families and several new results of generalized Hermite-Hermite matrix polynomials have been established.

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