Pathan, Mahmood Ahmad; Khan, Wassem Ahmad

Summary: A unified presentation of a class of Humbert’s polynomials in two variables which generalizes the well known class of Gegenbauer, Humbert, Legendre, Chebyscheff, Pincherle, Horadam, Kinney, Horadam-Pethe, Djordjević, Gould, Milovanović and Djordjević, Pathan and Khan polynomials and many not so called 'named' polynomials has inspired the present paper. We define here generalized Humbert-Hermite polynomials of two variables. Several expansions of Humbert-Hermite polynomials, Hermite-Gegenbauer (or ultraspherical) polynomials and Hermite-Chebyshev polynomials are proved.

MSC:
11B39 Fibonacci and Lucas numbers and polynomials and generalizations
05A19 Combinatorial identities, bijective combinatorics
33C45 Orthogonal polynomials and functions of hypergeometric type (Jacobi, Laguerre, Hermite, Askey scheme, etc.)
33C55 Spherical harmonics
33C99 Hypergeometric functions

Keywords:
Hermite polynomials; generalized Humbert polynomials; generalized $(p,q)$-Fibonacci polynomials; generalized $(p,q)$-Lucas polynomials

Full Text: DOI

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