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SOME PROPERTIES OF THE Q-ADIC VANDERMONDE MATRIX*

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Abstract. The Vandermonde and confluent Vandermonde matrices are of fundamental significance in matrix theory. A further generalization of the Vandermonde matrix called the q-adic coefficient matrix was introduced in [V. Mani and R. E. Hartwig, *Lin. Algebra Appl.*, to appear]. It was demonstrated there that the q-adic coefficient matrix reduces the Bezout matrix of two polynomials by congruence. This extended the work of Chen, Fuhrman, and Sansigre among others. In this paper, some important properties of the q-adic coefficient matrix are studied. It is shown that the determinant of this matrix is a product of resultants (like the Vandermonde matrix). The Wronskian-like block structure of the q-adic coefficient matrix is also explored using a modified definition of the partial derivative operator.

Key words. Vandermonde, Hermite Interpolation, q-adic expansion.

AMS(MOS) subject classification. Primary 15A15, 15A21, 41A10, 12Y05

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