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A NOTE ON NEWBERY'S ALGORITHM FOR DISCRETE LEAST-SQUARES APPROXIMATION BY TRIGONOMETRIC POLYNOMIALS*

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Abstract. Recently fast, efficient and reliable algorithms for discrete least-squares approximation of a real-valued function given at arbitrary distinct nodes in $[0, 2\pi)$ by trigonometric polynomials were presented in different papers. These algorithms are based on schemes for the solution of inverse unitary eigenproblems and require only $O(mn)$ arithmetic operations as compared to $O(mn^2)$ operations needed for algorithms that ignore the structure of the problem. In 1970 Newbery already presented a $O(mn)$ algorithm for solving the discrete least-squares approximation by trigonometric polynomials. In this paper the connection between the different algorithms is illustrated.

Key words. trigonometric approximation.

AMS subject classifications. 65D10, 42A10, 65F99.

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