A new Approach for Solving Optimal Control Problems Using Normalized Boubaker Polynomials

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Abstract

In this paper, the orthonormal family of Boubaker polynomials was found by using Gram-Schmidt orthonormalization process, the operational matrices of derivative and integration were deduced for the same orthonormal Boubaker polynomials, then the solution of optimal control problem can be achieved using indirect method with the aid of the operational matrices of derivative. Numerical examples were given to show the applicability and efficiency of the method.

Keywords: optimal control problem (OPC), Orthonormal polynomials, indirect method, Boubaker polynomials.