

عنوان مقاله:

Using shifted Legendre orthonormal polynomials for solving fractional optimal control problems

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خلاصه مقاله:

shifted Legendre orthonormal polynomials (SLOPs) are used to approximate the numerical solutions of fractional optimal control problems. To do so, first, the operational matrix of the Caputo fractional derivative, the SLOPs, and Lagrange multipliers are used to convert such problems into algebraic equations. Also, the method is proposed for solving multidimensional problems. We obtained the error bound of the operational matrix in fractional derivatives and proved the convergence of the method. Then, this is tested on some nonlinear examples. Comparison of our results with those obtained by other techniques in previous studies revealed the accuracy of the proposed technique for nonlinear and multidimensional problems

کلمات کلیدی:

Fractional optimal control problem (FOCP), shifted Legendre orthonormal polynomials (SLOPs), Caputo fractional derivative

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