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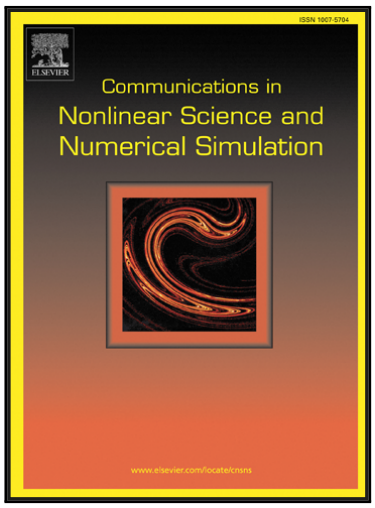

A new operational approach for solving fractional variational problems depending on indefinite integrals

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Highlights

- In this paper, we construct a new method to solve fractional variational problems depending on indefinite integrals with a fractional derivative, described in the Caputo sense. Shifted Chebyshev orthonormal polynomials are adopted as a basis function of the fractional integral's operational matrix, described in the sense of Riemann-Liouville. Together with the Lagrange multiplier method, such fractional variational problems are reduced to simpler problems consisting of a system of algebraic equations. Numerical examples are carried out to confirm the accuracy, efficiency and applicability of the proposed algorithm.

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