

# Numerical Solution of Abel Type Non-linear Fractional Integral Equations Based on Orthogonal Polynomials

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## ABSTRACT

This article offers a broad framework for locating the approximate answer to Abel-type non-linear fractional integral problems. Shifted Legendre Polynomials (SLPs) and Lagrangian Interpolating Polynomials (LIPs) are used as the basis functions in this method. To transform the original issue into a system of algebraic nonlinear equations, operational matrices of SLPs and LIPs are first built. Under various benign circumstances, we looked at the provided schemes' convergence and stability study. The method's effectiveness is supported by the inclusion of numerous test functions.

**Keywords:** Legendre Polynomial, Operational Matrix, Fractional Integration.

