

# A High-Order Method for Solving Two-Point Boundary Value Problems of Fractional Differential Equations

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## ABSTRACT

In this paper, we propose a high order method for solving two-point boundary problems of fractional order. The main idea of the scheme is to change the two-point boundary value problem (BVP) into the initial value problem (IVP). For updating an approximation of IVP combined with the boundary condition, we employ the nonlinear shooting method that constructs auxiliary IVP. In order to increase an accuracy of the approximated solution, a high-order method based on a modified PECE method, which is the second or third order method, is applied [1]. To update an initial condition for IVP, the Newton's method and Halley's method are applied for the second and third order accuracy, respectively. Several numerical examples are demonstrated to show the effectiveness of the proposed method.

## REFERENCES

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