

# **Abstract**

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## **An efficient technique for finding the eigenvalues and the eigenelements of fourth-order Sturm-Liouville problems**

In this paper an efficient method based on Legendre-Galerkin method for computing the eigenvalues of fourth-order Sturm-Liouville problem subject to a kind of fixed boundary conditions is developed. Properties of Legendre polynomials are first presented, these properties are then utilized to reduce the eigenvalues of fourth-order Sturm-Liouville problem to some linear algebraic equations. The method is computationally attractive, and applications are demonstrated through an illustrative example and a comparisons with other methods are made.