Use of Chebyshev Polynomials to Construct $L^2$ and Hilbert Space Inner Product to Solve Eigenvalue Problems With High Accuracy

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Thesis Defense

Abstract: Based on Chebyshev polynomials, $L^2$ and Hilbert Space Inner Product functions, which satisfy the given boundary conditions, can be constructed to solve an eigenvalue problem. With such two basis functions, it is easy to discretize the given eigenvalue functions and solve the corresponding eigenvalues by exploiting the properties of Chebyshev polynomials. Moreover these two techniques lead to higher accuracy results than the Tau method.

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