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Modified Chebyshev collocation method for pantograph-type differential equations

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## Highlights

- Numerical approximation is based on shifted Chebyshev polynomials.
  The operational matrices of derivative and pantograph are derived.
  We have provided a rigorous error analysis in L<sup>2</sup>-norm.
  Our results are compared with the solutions obtained by other methods.
- Model is a delay differential equation which has many applications.

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