

**El-Daou, M. K.; Ortiz, E. L.**

**Error analysis of the Tau method: Dependence of the error on the degree and on the length of the interval of approximation.** (English) Zbl 0772.65054

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For the Tau method it is known that the norm of the error function and the sum of the absolute values of the Tau method parameters have the same rate of convergence. In this paper the authors investigate the speed of convergence of the approximation error by concentrating on the behaviour of these parameters.

Basic results are: the parameters decay exponentially in terms of  $n$ , for  $n$  fixed parameters decay as  $(h/2)^n$  where  $h$  is the length of the interval on which the approximation is sought. Two examples from initial and boundary value problems for ordinary differential equations are given.

Reviewer: [Z.Schneider \(Bratislava\)](#)

**MSC:**

- [65L70](#) Error bounds for numerical methods for ordinary differential equations
- [65L10](#) Numerical solution of boundary value problems involving ordinary differential equations
- [65L05](#) Numerical methods for initial value problems
- [34A34](#) Nonlinear ordinary differential equations and systems, general theory
- [34B15](#) Nonlinear boundary value problems for ordinary differential equations

Cited in **12** Documents

**Keywords:**

[error analysis](#); [Tau method](#); [rate of convergence](#)

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