Generalization of Tau Approximant and Error Estimate of Integral Form of Tau Methods for Some Class of Ordinary Differential Equations

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Abstract : An error estimation of the integrated formulation of the Lanczos tau method for some class of ordinary differential equations was reported. This paper is concern with the generalization of tau approximants and their corresponding error estimates for some class of ordinary differential equations (ODEs) characterized by $m + s = 3$ (i.e for $m = 1$, $s=2$; $m=2$, $s=1$; and $m=3$, $s=0$) where m and s are the order of differential equations and number of overdetermination, respectively. The general result obtained were validated with some numerical examples.

Keywords : approximant, error estimate, tau method, overdetermination