

## PREDICTOR-CORRECTOR SCHEME IN MODIFIED BLOCK METHOD FOR SOLVING DELAY DIFFERENTIAL EQUATIONS WITH CONSTANT LAG

(Skim Peramal-Pembetulan dalam Kaedah Blok Diubah Suai untuk Menyelesaikan Persamaan  
Pembezaan Tunda dengan Penangguhan Malar)

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### ABSTRACT

In this paper, the numerical solution of delay differential equations using a predictor-corrector scheme in modified block method is presented. In this developed algorithm, each coefficient in the predictor and corrector formula are recalculated when the step size changing. The Runge-Kutta Fehlberg step size strategy has been applied in the algorithm in order to achieve better results in terms of accuracy and total steps. Numerical results are given to illustrate the performance of this modified block method for solving delay differential equations with constant lag.

*Keywords:* delay differential equations; modified block method; variable step size

### ABSTRAK

Dalam makalah ini, penyelesaian berangka bagi persamaan pembezaan tunda menggunakan skim peramal-pembetulan dalam kaedah blok diubah suai dipersembahkan. Dalam al-Khwarizmi yang dibangunkan ini, setiap pekali dalam rumus peramal dan pembetulan dikira semula apabila saiz langkah berubah. Strategi saiz langkah Runge-Kutta Fehlberg telah disuaikan dalam al-Khwarizmi bagi memperoleh keputusan yang lebih baik dari segi kejituan dan jumlah langkah. Keputusan berangka diberikan untuk menggambarkan prestasi bagi kaedah blok diubah suai dalam menyelesaikan persamaan pembezaan tunda dengan penangguhan tetap.

*Kata kunci:* persamaan pembezaan tunda; kaedah blok diubah suai; saiz langkah berubah

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