SOME RUNGE-KUTTA TYPE FORMULAS WITH LARGE REGION OF ABSOLUTE STABILITY

(Abstract)

A class of Runge-Kutta type integration formulas for problem (1.1) are presented, formulas generated by the scheme (3.6). The methods have fourth order accuracy and q-stages, $q > 4$. The coefficients of these formulas are expressed in terms of β_j, $j = \overline{5, q}$, the coefficients of stability polynomial, by the equations (3.11) and if β_j, $j = \overline{5, q}$, take the optimal values from [1], then these formulas become optimal from the stability point of view.