**Partitioning ordinary differential equations using Runge-Kutta methods**

ABSTRACT

Two techniques for detecting stiffness when using Runge-Kutta type of methods are discussed and compared, and a partitioning strategy for first-order system of equations into stiff and nonstiff subsystems is proposed. A few problems are solved using three-stage semi-implicit Runge-Kutta method. Newton iteration is used for the stiff part and simple iteration for the nonstiff. Finally, numerical results based on different criteria to detect stiffness are compared.

**Keyword:** Runge-Kutta methods; Stiffness