

Some Efficient Schemes for Numerical Integration of Strangeness-free Differential-algebraic Equations

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Abstract: It is known that standard DAE solvers such as implicit Runge-Kutta or BDF methods are costly when they are applied to large-sized or matrix-valued systems of non-linear DAEs. In addition, many methods may suffer order reduction and/or stability loss. In this talk, we propose and analyse some half-explicit and implicit integration schemes for strangeness-free DAEs, which are cheaper and/or preserve both the stability and the accuracy order of their underlying ODE methods. Several numerical experiments are given for illustration.

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