

*Order conditions for multirate infinitesimal step methods*

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Multirate infinitesimal step methods (MIS) are generalised split-explicit Runge-Kutta methods (RK) especially designed for problems in different temporal scales. They have been developed and investigated for up to order three. It can be shown that they are somehow related to multirate generalised additive RK methods (MGARK). Following the ideas of MGARK methods, the MIS methods can also be reformulated to partitioned RK methods.

In this presentation, applying the strategy of the reformulation, it will be shown how high-order conditions can be derived. Furthermore, a method of 4th-order is developed and presented as well as illustrated with numerical examples.