Runge-Kutta starting procedures for monotonicity of explicit linear multistep methods

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In this talk an analysis of monotonicity properties for linear multistep methods is presented. Following the approach of [1] we will give sufficient and necessary conditions for monotonicity (strong stability preservation) of linear multistep methods with Runge-Kutta starting procedures. The results apply to many popular methods that are used in practice. Several numerical experiments will illustrate the theory.

References

[1] W. Hundsdorfer, A. Mozartova and M. N. Spijker, *Stepsize Restrictions for Boundedness and Monotonicity of Multistep Methods*, J. Sci. Comput. (50) 2012, 265-286.