A rational short-memory approach for FDEs

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The numerical solution of Fractional Differential Equations (FDEs) may be obtained by using finite-term recursions [2]. For the construction of such formulas in this talk we shall present a technique based on the rational approximation of the generating functions of Fractional Backward Differentiation Formulas (FBDFs) [1]. Accurate approximations lead to the definition of methods which simulate very well the theoretical properties of the underlying FBDF, with noticeable advantages in terms of memory saving. This fact becomes particularly evident when they are used for discretizing fractional partial differential equations, as confirmed by the numerical experiments presented.

References

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