Spectrally accurate solutions of nonlinear fractional initial value problems.

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Abstract

In this talk, we extend a technique recently used to devise a novel class of geometric integrators named Hamiltonian Boundary Value Methods, to cope with nonlinear fractional differential equations. The approach relies on a truncated Fourier expansion of the vector field which yields a modified problem that can be suitably handled on a computer. An example showing the convergence properties of the resulting spectral approximation method is also presented.

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