NUMERICAL REGULARITY MAP FOR FUNDAMENTAL ONE-DIMENSIONAL FRACTIONAL DIFFERENTIAL EQUATIONS WITH HÖLDER CONTINUOUS SOLUTIONS

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Abstract.   In the paper, fundamental one-dimensional fractional differential equations in the sense of Caputo with Hölder continuous solutions are solved numerically. A large number of numerical experiments results in a numerical regularity map which visualizes relationship between the Hölder exponent of the solution, the convergence rate of schemes, and the order of the derivative. The map reveals that the rate of convergence changes depending on whether the derivative order is greater than or less than one.