



The order of convergence for fractional equations

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In this talk we study a well-posed Cauchy problem with a fractional Caputo derivative of the order $\alpha \in (0, 1)$ in time in a Banach space E :

$$D^\alpha u(t) = Au(t) + f(t), \quad u(0) = u^0. \quad (1)$$

It is well-known [1] that the order of convergence in the approximation by a difference scheme with uniform grid of such equations has an order controlled by the exponent α . Here we first investigate the well-posedness of (1) on a Holder class of functions [2] and the second we consider the non-uniform grid of the scheme. The stability and accuracy estimates for a proposed finite difference scheme [3] are obtained.

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References

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