

Pointwise-in-time a posteriori error control for time-fractional parabolic equations

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For time-fractional parabolic equations with a Caputo time derivative of order $\alpha \in (0, 1)$, we give pointwise-in-time a posteriori error bounds in the spatial L_2 and L_∞ norms. Hence, an adaptive mesh construction algorithm is applied for the L1 method, which yields optimal convergence rates $2 - \alpha$ in the presence of solution singularities.

The talk is based on the recent article: N. Kopteva, Pointwise-in-time a posteriori error control for time-fractional parabolic equations, Appl. Math. Lett., 2021, <https://doi.org/10.1016/j.aml.2021.107515>.