

***On PDE convergence of AMF-TASE W-methods for
multidimensional linear parabolic problems***

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This talk deals with the time-integration of space-discretised parabolic problems subject to Dirichlet boundary conditions on a rectangular m -dimensional domain. We consider a class of linearly implicit methods (TASE W-methods, [2]) in combination with Approximate Matrix Factorization [1] based on an alternating direction implicit approach, which allows to reduce the algebra cost to the level of one-dimensional problems. Optimal results on PDE-convergence will be presented for linear problems, the Euclidean norm and arbitrary spatial dimensions $m \geq 2$. Numerical experiments will be presented to assess the PDE-convergence results.

References

1. *D. Conte, S. González-Pinto, D. Hernández-Abreu and G. Pagano.* On Approximate Matrix Factorization and TASE W-methods for the time integration of parabolic Partial Differential Equations. *J. Sci. Comput.* 100(2), 34, 2024.
2. *S. González-Pinto, D. Hernández-Abreu, G. Pagano and S. Pérez-Rodríguez.* Generalized TASE-RK methods for stiff problems. *Appl. Numer. Math.* 188, 129-145, 2023.

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