

### *Numerical tests with AMF methods*

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In this talk, we consider numerical methods for the solution of stiff initial value problems

$$y'(t) = f(t, y(t)), \quad y(t_0) = y_0 \in \mathbb{R}^n, \quad t \in [t_0, t_e]. \quad (1)$$

Implicit integration methods require the solution of linear systems, which can be very expensive for high dimensional problems (1). One possibility is to apply an Approximate Matrix Factorization (AMF) technique. The AMF approach uses some splitting of the right-hand side of (1) and exploits special structures of the corresponding Jacobians. We consider linearly-implicit one-step W-methods and two-step W-methods with AMF. Furthermore, we discuss AMF peer methods, which require the application of Newton iteration. We compare these schemes in numerical experiments on a linear model.

## References

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- [3] H. Podhaisky, R. Weiner and B.A. Schmitt. Two-step W-methods for stiff ODE systems. *Vietnam J. Math.* **30**, 591–603 (2002).