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Recent advances in extrapolation methods for large scale differential algebraic problems

We consider the solution of differential algebraic problems by extrapolation methods. Based on the linearly–implicit Euler discretization these algorithms enable a fully adaptive order and stepsize control as well as the computation of consistent initial values. We present new efficient methods for large systems using iterative and parallel solution strategies and demonstrate their value for difficult problems in chemical engineering.

References: U. Nowak, A Fully Adaptive MOL-Treatment of Parabolic 1D–Problems with Extrapolation Techniques, *Appl. Numer. Math* **20** (1996), 129–145.

R. Ehrig, U. Nowak, P. Deuflhard, Massively Parallel Linearly—Implicit Extrapolation Algorithms as a Powerful To ol in Process Simulation, *Adv. in Parallel Computing*, to appear