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Non-Conventional Time Stepping Methods for Solving the Flow Equations

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This talk discusses recent results on a time stepping methodology for solving flow equations. We currently investigate an extrapolation-based family of integrators. The base method is linearly implicit Euler, paired with a matrix-free approach for the solution of the linear system. The extrapolation technique allows to construct high order Rosenbrock-type integrators, allows to combine implicit and explicit methods, and allows to use different time steps on different parts of the domain. Results are shown for high order spatial discretizations working on adaptive meshes.