

## Time step control for variational time discretisations of higher order and higher regularity

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As generalisation of the well-known discontinuous Galerkin (dG) and continuous Galerkin-Petrov (cGP) methods, a two-parametric family of variational time discretisations has been proposed recently. The two family parameters allow to control the ansatz order and global smoothness of the solution. Hence, higher order schemes with higher order regularity can be obtained by adjusting the family parameters in the right way.

Many variational time discretisation methods provide a cheap post-processing leading to a solution that converges in integral-based norm of one order higher than those of the original methods. Hence, the difference between the original and the post-processed solution can be used within an adaptive time-step control. We will discuss the behaviour in dependence of the two family parameters of the variational time discretisation schemes.

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