Some aspects of 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 ansatz order and global smoothness of discrete solutions. 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 post-processing mechanisms leading to discrete solutions that converge in integral-based norms of one order higher than those of the original methods. In dependence of the two family parameters of the variational time discretisation schemes, we discuss two types of post-processing and study the influence of cascadic interpolation.

References:

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