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Explicit higher-order accurate isogeometric collocation methods for structural dynamics

J.A. Evans, R.R. Hiemstra, T.J.R. Hughes, A. Reali

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Highlights for “Explicit Higher-Order Accurate Isogeometric Collocation Methods for Structural Dynamics”

1. A family of explicit isogeometric collocation methods that are obtained from predictor-multicorrector schemes is presented.
2. The classical predictor-multicorrector method is reformulated in a semi-discrete format that enables, for the first time, a complete theoretical analysis precisely characterizing its spatial and modal accuracy as a function of the number of corrector passes, independent of the considered time-integration scheme.
3. For pure Dirichlet problems, it is shown that second-, fourth-, and fifth-order accuracy in space is possible with one, two, and three corrector passes, respectively.
4. High-order accuracy in time is achieved through the application of explicit Runge-Kutta methods to the semi-discrete predictor-multicorrector method.
5. Numerical examples confirm the accuracy of the family of methods.

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