

PETIGA: A FRAMEWORK FOR HIGH PERFORMANCE ISOGEOMETRIC ANALYSIS

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Abstract. We present PetIGA, a code framework for high performance isogeometric analysis targeting distributed memory architectures. This framework is heavily based on PETSc, a scientific library geared to implementing scalable linear and nonlinear solvers needed to solve partial differential equations. Our open source library can be used to assemble Jacobian matrices and residual vectors which come from Galerkin weak forms, discretized with Nonuniform Rational B-spline (NURBS) basis functions. We showcase a variety of nonlinear, time dependent, high-order problems illustrating the flexibility of our framework. Finally, we show performance and parallel scalability results and discuss on the performance of isogeometric analysis in comparison to classical finite element approaches.