Finite element discretizations of the elasticity complex

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ABSTRACT

We will discuss discrete versions of the elasticity complex in three space dimensions. The elasticity complex is a sequence of maps and spaces which has proved to be important for the construction of mixed finite element methods for linear elasticity, derived from the Hellinger–Reissner principle. Furthermore, this complex indicates a connection between mixed finite element methods for linear elasticity and discretizations of the Einstein curvature tensor appearing in general relativity. The purpose of this talk is to derive various discretizations of the elasticity complex, and to discuss the properties of the corresponding numerical schemes.