Bounded Cochain Projections and Finite Element Exterior Calculus

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Finite element exterior calculus is an approach to design discretizations for a variety of systems of partial differential equations. The stability and convergence properties of such schemes can be derive from a general abstract theory of Hilbert complexes and their discretizations. A key ingredient of this theory is the existence of bounded cochain projections, and therefore, to apply the abstract theory in a given setting, more concrete constructions of such projections has to be carried out. In this talk we will first explain the importance of bounded cochain projections, and then we will review some of the possible techniques which can be used for their construction.