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Douglas N. Arnold* (arnold@umn.edu), School of Mathematics, University of Minnesota, Minneapolis, MN 55455. *Unisolvency in the finite element exterior calculus.*

This talk will focus on the verification of unisolvency for finite element spaces in the finite element exterior calculus. A finite element is defined by specifying, for each element, a space of shape functions and a set of degrees of freedom. The degrees of freedom must be unisolvent, that is, they must form a basis for the dual of the shape function space. The verification of unisolvency often guides the construction of finite elements. While this has been an important part of finite elements since the beginning, the finite element exterior calculus has led to many new families of finite elements and unified many of the existing one, and, in particular, has clarified the approaches to unisolvency. (Received September 25, 2012)