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**Michael J Neilan\*** (neilan@pitt.edu) and **Duygu Sap** (duygusap@googlemail.com). *Stokes Elements on Cubic Meshes Yielding Divergence-Free Approximations.*

Using a finite element exterior calculus framework, conforming piecewise polynomial spaces with respect to cubic meshes are constructed for the Stokes problem in arbitrary dimensions yielding exactly divergence-free velocity approximations. We first discuss the construction of the lowest order case, its implementation, and convergence analysis. We then introduce finite element spaces with continuous pressure approximations leading to a system of less unknowns. Finally, numerical experiments are shown verifying the theoretical results. (Received August 25, 2014)