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**Evan S. Gawlik\*** (egawlik@hawaii.edu), **Michael Holst** and **Martin W. Licht**. *A Scott-Zhang Interpolant and Piecewise Bramble-Hilbert Lemma for Finite Element Exterior Calculus*. Preliminary report.

We construct a Scott-Zhang interpolation operator for finite element exterior calculus. Like the classical Scott-Zhang interpolation operator for scalar-valued functions, the degrees of freedom for this operator involve integrals over simplices of co-dimension at most one. The operator enables the interpolation of rough differential forms, preserves homogeneous boundary conditions, and enjoys optimal approximation error bounds in suitable Sobolev norms. We use it to prove a piecewise Bramble-Hilbert lemma that is applicable to differential forms that possess Sobolev-Slobodeckij regularity elementwise and admit a single-valued trace on every interface between pairs of adjacent elements. (Received January 27, 2019)