1171-65-122 **Mark Ainsworth** and **Charles W Parker*** (charles_parker@brown.edu). *Preconditioning Mixed High Order Finite Elements for Incompressible Flow.*

The development of pointwise divergence-free finite element methods for Stokes flow has received much attention recently. The stability of these methods affects the optimality of a priori error estimates and the performance of preconditioners. We present a method which is uniformly stable in both the mesh size and polynomial order. In particular, the method possesses optimal convergence properties. We then address the issue of preconditioning. The method is illustrated by applying it to the solution of a number of representative test problems. (Received August 09, 2021)