## Compatible spatial discretization using generalized moving least squares

Nathaniel Albert Trask, Sandia National Laboratory

While meshless methods provide a degree of flexibility that is attractive for many problems, the lack of an underlying mesh precludes the application of exterior calculus concepts that has been key to developing physics compatible discretizations for many problems. We present recent work using generalized moving least squares (GMLS) to develop schemes for the div-grad and the div-curl problems. We demonstrate that these schemes allow robust high-order discretization of the stationary Stokes problem while maintaining equal high-order convergence for both velocity and pressure, and present results using these schemes to study electrophoretic suspension flows.