1109-65-236 **Aycil Cexmelioglu*** (cesmelio@oakland.edu), **Bernardo Cockburn** and **Weifeng Qiu**.
Analysis of a Hybridizable Discontinuous Galerkin Method for the incompressible Navier-Stokes equations. Preliminary report.

We present an a priori error analysis of a hybridizable discontinuous Galerkin method, for the approximation of the stationary incompressible Navier-Stokes equations. The method is defined on conforming triangulations providing piecewise polynomial approximations of fixed degree k to the velocity gradient, velocity and pressure. Under a small data assumption, we prove that the method is well defined and that the global L^2-norm of the error in each variable converges with optimal order of $k+1$, $k \geq 0$. Furthermore, the approximate velocity is shown to be superconvergent which is then elementwise postprocessed to obtain an H(div)-conforming, divergence-free approximate velocity which converges with an order of $k+2$, $k \geq 1$. (Received February 02, 2015)