

1135-65-710

Xiu Ye*, 2801 S. University ave, little rock, AR 72223, and **Lin Mu**. *A posteriori error analysis on polytopal meshes and simple methods for the problems with non-divergence forms.*

The goal of this talk is twofold:

First, a posteriori error estimators have been developed for both the weak Galerkin and the discontinuous Galerkin finite element methods. The most existing a posteriori error analysis only work on simplicial elements even for the polygonal and polyhedral finite element methods. Our new residual type estimators can be applied to general meshes such as hybrid mesh, polytopal mesh and mesh with hanging node. In addition, these estimators consist fewer terms and are easy to compute.

Second, we present simple finite element methods for solving some non classic problems such as second order elliptic equations in non-divergence form, Cauchy Problem and simple hyperbolic problem. Error analysis have been provided and extensive numerical examples have been tested. (Received September 13, 2017)