

1124-65-35

Puja Rattan* (prattan@uncc.edu) and **Dr. Hae Soo Oh** (hso@uncc.edu). *Enrichment and multi-iterative approaches in the framework of IGA collocation to deal with elliptic PDEs containing singularities*. Preliminary report.

In this talk, we present two different approaches to solve PDEs with singularities using IGA collocation method. Since collocation reduces the cost and time taken in integrating each element of the stiffness matrix therefore by using these methods we can optimize the computational cost and also take the advantage of geometrical flexibility and accuracy of IGA method.

First approach is to modify basis functions using partition unity functions. Then the neighborhood of singularity will be enriched by these modified basis functions so that they can capture the singular behavior of the solution. Second approach is to use multi-iterative domain decomposition technique to handle singularity. This technique has been applied to problems using overlapping as well as non-overlapping domains. Numerical results for both proposed methods are presented and compared with the results obtained by IGA-galerkin method. (Received August 09, 2016)