

1124-65-54

Bongsoo Jang, Hyunju Kim and Hae-Soo Oh* (hso@uncc.edu), 9201 University City Boulevard, Charlotte, NC 28223, and **Sinae Kim**. *Partition of unity isogeometric analysis of two dimensional elliptic singular perturbation problems.*

The design basis functions on the reference domain in IGA are diversified and enhanced by extra enrichment functions and various local refinements with the use of partition of unity function with flat-top. These reconditioned and modified basis functions are pushed forward to the physical domain by the original design mapping for analysis. With this method, the corresponding stiffness matrix has a small bandwidth and local refinement is simple. Moreover, we construct the partition of unity functions in the reference domain and then move them to a physical domain through a geometric mapping to be used for the generation of global basis functions on a physical domain. Therefore, we also have several advantages in calculating stiffness matrices and load vectors. Here we apply this method to various boundary layer problems. (Received August 22, 2016)