

## A HIGH ORDER IMMERSED BOUNDARY METHOD

**Adrian Lew**

*Stanford University, United States, lewa@stanford.edu*

**Abstract.** We will describe a new high order immersed boundary method for the numerical solution of partial differential equations when using triangulations that may not conform to the domain of the problem. The problem domains we consider include open sets with curved boundaries, domains with interfaces, corners and T-junctions. Yet, the mesh adopted to compute the solution can be almost arbitrary; we only require that it be sufficiently refined and that certain angles be acute. For instance, any refined mesh of equilateral triangles is always a permissible background mesh. By carefully approximating the domain over the background mesh, we ensure that the numerical solution we compute converges optimally to the exact one.