

Abstract Submitted
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Robust and accurate finite volume method on highly skewed unstructured meshes HYUNCHUL JANG, KRISHNAN MAHESH, Aerospace Engineering, University of Minnesota — Geometric complexity often causes highly skewed meshes, which can affect stability and accuracy of numerical scheme. It is well known that the accuracy of numerical methods degrades rapidly with increase of internal angles in skewed elements. A regularized least squared method with multi-dimensional slope limiters is derived for convective flux reconstruction. Two deferred correction methods are also derived for diffusive flux reconstruction and the Poisson equation. Those methods show considerable improvement and converge even on highly skewed meshes. Also, the second-order accuracy is held with those methods on both of mildly and highly skewed meshes. This numerical method is applied to a realistic complex problem such as the large eddy simulation for marine propulsor in an extreme operating condition. This work is supported by the United States Office of Naval Research under ONR Grant N00014-02-1-0978.

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