Abstract Submitted
for the DFD19 Meeting of
The American Physical Society

LES of Compressible Gas Flow Impinging on a Wall using High Order Schemes in an Unstructured Grid. DOUGLAS FONTES, MICHAEL KINZEL, University of Central Florida — In this work, compressible gas flow impinging on a wall is solved using large eddy simulation in an unstructured mesh. In this kind of flow, complex phenomena such as shock waves, high gradients, turbulence, and wall interaction can arise. In most Computational Fluid Dynamics (CFD) codes, typically with unstructured grids, spatial schemes are limited to first and second order due to the difficulties of obtaining the information of neighboring elements. This limitation results in a higher computational cost to achieve a specific accuracy. High order schemes in unstructured grids, using a flux reconstruction method, have been implemented in an open source code termed as PyFR. Thus, the present effort explores the application of PyFR to perform Large Eddy Simulation (LES) for an impinging jet case discretized with an unstructured mesh. In this study, we will identify turbulent structures and the formation of instabilities. In addition, comparisons will be developed with RANS prediction. All numerical predictions will be compared to an experimental case in order to analyze the numerical accuracy in terms of experimental results.

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Date submitted: 25 Jul 2019 Electronic form version 1.4