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Journal Name:	Journal of Advances in Mathematics and Computer Science
Manuscript Number:	Ms_JAMCS_36902
Title of the Manuscript:	Comparison Among Unstructured TVD, ENO and UNO Schemes in Two-Dimensions
Type of the Article	Original Research Article

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This journal's peer review policy states that **NO** manuscript should be rejected only on the basis of '**lack of Novelty**', provided the manuscript is scientifically robust and technically sound. To know the complete guideline for Peer Review process, reviewers are requested to visit this link:

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PART 1: Review Comments

	Reviewer's comment	Author's comment (if agreed with reviewer, correct the manuscript and highlight that part in the manuscript. It is mandatory that authors should write his/her feedback here)
Compulsory REVISION comments		
Minor REVISION comments	This paper study the In this work, unstructured TVD, ENO and UNO schemes are applied to solve the Euler equations in two-dimensions. They are implemented on a finite volume context and cell centered data base. The algorithms of Yee, Warming and Harten 1982; Harten; Yee and Kutler; Yee Warming and Harten 1985; Yee; Yee and Harten; Harten and Osher; Yang; Hughson and Beran; and Yang and Hsu are implemented to solve such system of equations in two-dimensions. All schemes are flux difference splitting and good resolution is expected. This study deals with calorically perfect gas model and in so on the cold gas formulation is employed. Two problems are studied, namely: the transonic convergent-divergent symmetrical nozzle, and the supersonic ramp. A spatially variable time step is implemented to accelerate the convergence process. The results highlights the excellent performance of the Yang TVD scheme, yielding an excellent pressure distribution at the nozzle wall, whereas the Harten and Osher scheme yields accurate values to the angle of the oblique shock wave and the best wall pressure distributions in the ramp problem. The paper is well organized and its presentation is basically acceptable. The obtained results are also interesting. In my opinion, this paper contains publishable results. I would like to recommend to publish this paper in this journal. The following are some comments that the authors might like to take into account when revising the paper: The motivation on the study should be further emphasized. In particular, the main advantages of the results in this paper over some existing ones should be clearly demonstrated. * Some more remarks after the development of the main results would be helpful. * How the new algorithm developed in the appear compared with other existing ones?	• The motivation of the paper is to construct unstructured solutions to perfect gas formulation aiming their application in “hot gas” flows. The present work is a first step in extending unstructured strategy to chemical and thermochemical non-equilibrium flows using ENO or spectral methods. The implementation of the unstructured strategy to two-dimensional thermochemical non-equilibrium formulation using spectral methods is almost ready. The results in the present paper are very encouraging and the use of such discretization in spectral methods is ready to be used. The results of the present paper are meaningful in the sense that with unstructured discretization more complex problems can be addressed and the intention of the present authors is to study complex unstructured three-dimensional problems, like wings, fuselage, etc. In two-dimensions, we can explore the advantage of using triangular cells that conforms to the geometry under study better than rectangular cells, mainly no very close to the geometry, where rectangular cells are the best, but close to the bulk flow. The results in this paper are an indicative that unstructured discretization is better for complex configurations than the structured discretization. In relation to structured solutions, the use of Quimera or multi-block meshes are needed for solve complex configurations. In the unstructured solutions, these procedures are not necessary. So, in relation to structured solutions, the unstructured discretization is far superior. This comment was added to the manuscript; • The new algorithm developed by the first author is easy to work and present the possibility of using 10 different numerical schemes for solving the fluid flow. They were implemented on both two- and three-dimensional contexts. They are implemented on a cell centered database. It can use different time step procedures, one for inviscid flows and another for viscous flows. It needs more elaboration on grid refinement, but for simple geometries it works well. Grid refinement is the next step to improve the algorithm. In relation to existing ones, it is comparable in computational cost, being cheaper than the others because of the grid refinement absence, and presents solutions as good as the others.



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Optional/General comments		
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