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| Journal Name: | [Asian Journal of Pure and Applied Mathematics](https://www.jofmath.com/index.php/AJPAM) |
| Manuscript Number: | **Ms\_AJPAM\_1981** |
| Title of the Manuscript: | **A Transformative Geometric Framework for Dihedral Groups: The Symmetry Density Index in Three-Dimensional Space** |
| Type of the Article |  |

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| **PART 1: Comments** | | |
|  | **Reviewer’s comment**  **Artificial Intelligence (AI) generated or assisted review comments are strictly prohibited during peer review.** | **Author’s Feedback** (It is mandatory that authors should write his/her feedback here) |
| **Please write a few sentences regarding the importance of this manuscript for the scientific community. A minimum of 3-4 sentences may be required for this part.** | **This manuscript introduces a mathematical quantity called Symmetry Distribution Index(SDI) which could be a useful tool for computation of symmetry in numerous disciplines. It leverages the weighted SDI formulation to gain geometric insights to highlight the possible practical implications. This mathematical quantity can be a measure of symmetry in Simplicial complexes, Molecular degeneracies, electronic transitions, multi axis robotic symmetry, graph structures, biological networks. It opens up possibility for future research in the area of time varying SDI for dynamical systems and symmetry prediction in complex data sets using machine learning.** | The scientific community gets high benefits from the application of the dihedral group.The research paper deals with symmetry density index ( SDI) under the various dimensions. It deals with the application of rotations and reflection. |
| **Is the title of the article suitable?**  **(If not please suggest an alternative title)** | **Yes, it is** | Yes it is |
| **Is the abstract of the article comprehensive? Do you suggest the addition (or deletion) of some points in this section? Please write your suggestions here.** | **The rigour part mentioned in the abstract could be omitted.** | I don't think to to add some more points in abstract. |
| **Is the manuscript scientifically, correct? Please write here.** | Yes. | Yes |
| **Are the references sufficient and recent? If you have suggestions of additional references, please mention them in the review form.** | It is sufficient but it doesn’t contain any journal reference , all the reference are book references. | All the journal references are mentioned with latest journal. |
| **Is the language/English quality of the article suitable for scholarly communications?** | Yes. | Yes |
| **Optional/General** comments | **This paper mainly investigates and provides computational example of the symmetry index called symmetry distribution index(SDI). Dihedral group is a finite group consisting of rotational and reflection symmetries. In fact any group of order 2p where p is a prime is either cyclic or dihedral. It is a solvable group for any natural number n. Author defines SDI which is a measure of symmetry for a surface S where the dihedral group D\_n is acting. The author proves some basic results about this index like stability and robustness studied in terms of Lipschitz continuity, some numerical examples of the computed Lipschitz constant would have been nice. Then he goes on proving degeneracy conditions, subgroup dynamics. I was curious if there is any relation between the cayley graph of dihedral group and the theoretical results proved and why the diagram provided for cayley graph of D\_n has two magenta arrows between e and s and r^4 and sr^4 .**  **Then he provides many numerical examples of computation of the SDI and describes the various applications in different disciplines this index can have.** | Research paper mainly deals with the applications of the Dihedral group. Deals with the SDI and various other applications. The research paper has its application on computational topology, Quantum chemistry, robotic kinematics, material science and computer. This vast area is being benefited by my research article.  Along with the various application it has importance for researchers, students and various other mathematicians. |

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| **PART 2:** | | |
|  | **Reviewer’s comment** | **Author’s Feedback** (It is mandatory that authors should write his/her feedback here) |
| **Are there ethical issues in this manuscript?** | *(If yes, Kindly please write down the ethical issues here in detail)* | No |