The Journal of Open Source Software

HAOT: A Python package for hypersonic aero-optics analysis

Martin E. Liza [1]

1 The University of Arizona

DOI: 10.xxxxxx/draft

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Submitted: 01 January 1970
Published: unpublished

Summary

Hypersonic flows present a unique challenges due to the complex interplay of fluid dynamics, chemical reactions, and optical phenomena. As a signal from a Light Detection and Ranging (LiDAR) travels through a hypersonic flow field, the beam would be affected by the flow.

`HAOT` is a Hypersonic Aerodynamics Optics Tools Python package developed to calculate the index of refraction of a hypersonic medium.

Statement of Need

(Liza et al., 2023)

Algorithms

Acknowledgements

References

Liza, M., Tumuklu, O., & Hanquist, K. M. (2023, June). Nonequilibrium effects on aero-optics in hypersonic flows. *AIAA AVIATION 2023 Forum*. https://doi.org/10.2514/6.2023-3736