





# Gala: A Python package for galactic dynamics

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## Summary

The forces on stars, galaxies, and dark matter under external gravitational fields lead to the dynamical evolution of structures in the universe. The orbits of these bodies are therefore key to understanding the formation, history, and future state of galaxies. The field of “galactic dynamics,” which aims to model the gravitating components of galaxies to study their structure and evolution, is now well-established, commonly taught, and frequently used in astronomy. Aside from toy problems and demonstrations, the majority of problems require efficient numerical tools, many of which require the same base code (e.g., for performing numerical orbit integration).

## Statement of need

Although there are numerous low-fidelity design and analysis studies aimed at accurately characterizing the performance specifications of ramjet engines, most focus on individual components of the propulsion system rather than a comprehensive methodology. Few studies consider the combined influence of flight conditions and design parameters throughout the entire propulsive flow path. Therefore, this study integrates individual design and analysis approaches for high-speed propulsion components to develop a holistic, low-fidelity design method for cost-efficient characterization of the ramjet engine design space. Accordingly, RASDAS is developed.

## Research applications

## Citations

Citations to entries in paper.bib should be in [rMarkdown](#) format.

If you want to cite a software repository URL (e.g. something on GitHub without a preferred citation) then you can do it with the example BibTeX entry below for Smith et al. ([2020](#)).

For a quick reference, the following citation commands can be used: - @author:2001 -> “Author et al. (2001)” - [@author:2001] -> “(Author et al., 2001)” - [@author1:2001; @author2:2001] -> “(Author1 et al., 2001; Author2 et al., 2002)”

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## References

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- <sup>36</sup> Smith, A. M., Thaney, K., & Hahnel, M. (2020). Fidget: An ungodly union of GitHub and
- <sup>37</sup> figshare. In *GitHub repository*. GitHub. <https://github.com/arfon/fidget>

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