

# Review of: "ALR\_Sim\_tracks - trajectory simulator software to assist the search for favourable trajectories for the exploration of the triple Asteroid 2001-SN263 from the Laser Altimeter point of view"

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Potential competing interests: No potential competing interests to declare.

Within the scope of this work, the trajectory simulation and analyzer program known as ALR\_Sim\_tracks is presented. This software is intended for use in space missions that include the examination of the surface of a celestial body using optical sensors. In order to provide assistance to the ASTER space project, it was developed using the Laser Altimeter and the MATLAB program for the purpose of designing the mission.

The topic of the manuscript is interesting and important. The results are worth publication. However, the below remarks will enrich the paper.

## 1. Abstract

The provided abstract is well-constructed. It effectively conveys the key information about the ALR\_Sim\_tracks software, its purpose, and its application in trajectory simulation and analysis for space missions. The abstract is clear and concise, providing a solid overview of the software's role in the context of the ASTER mission and its potential application to other optical instruments.

In *page 2*. What the software does and how it works

Also it was mentioned that: In the second simulation carried out using it.

It is anew sentence in a new paragraph, it refereeing to what??

Fig. 2. Should appear in one page not two pages.

In page 6, 2.1.3. Spacecraft parameters<sup>2</sup> the superscript number 2 is it a reference??

Fig. 6(a). and Fig. 6(b). titles should be clearer as apart of them is missing.

A paper researching a trajectory simulator software for exploring asteroids, such as the ASTER mission targeting the triple asteroid 2001-SN263, should include the following key components with its main details:

## 1. Introduction:

1. Provide background information on the mission objective and the significance of exploring the asteroid.
2. Introduce the need for trajectory simulation software to identify favorable trajectories for exploration.

## 2. Mission Overview:

1. Describe the goals and objectives of the mission, including the scientific and exploration objectives related to the asteroid.
2. Outline the instrumentation and technology planned for the mission, with a focus on optical instruments like the Laser Altimeter.

## 3. Instrumentation Integration:

- Detail how the software integrates with optical instruments, especially the Laser Altimeter (ALR).
- Discuss the role of the laser altimeter in trajectory analysis and how it informs the simulation process.

## 5. Modeling Considerations:

- Explain the modeling techniques used for representing the asteroid, spacecraft, and other relevant celestial bodies in the simulation.
- Discuss any assumptions or simplifications made in the modeling process.

## 6. Discussion:

- Analyze and interpret the results in the context of mission objectives and scientific goals.
- Discuss the limitations of the software and potential areas for improvement.
- Address any challenges encountered during the trajectory analysis.

## 7. Applicability to Other Instruments:

- Explore the potential extension of the software's use to other optical instruments, detailing the considerations and adaptations required.

## 8. Conclusion:

- Summarize the key findings and contributions of the research and the benefits for the research community.

By incorporating these elements, the paper can comprehensively communicate the development, capabilities, and findings of the trajectory simulator software for asteroid exploration.