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IMPROVING FLIGHT SAFETY DURING SPACECRAFT LAUNCH OPERATIONS: A STUDY ON TRAJECTORY OPTIMIZATION FROM THE ALCÂNTARA LAUNCH CENTER

Abstract

This paper discusses the use of trajectory optimization software to define launch azimuths from the Alcântara Launch Center, aiming to improve flight safety during spacecraft launch operations.

The study's objective was to use trajectory optimization techniques to define rocket launch angles from the Alcântara Launch Center in Brazil by simulating launches with generic characteristics, which allowed for the evaluation of different scenarios and comparison of the results obtained.

The results showed that the use of trajectory optimization software can be an important tool to increase flight safety during launch operations. Additionally, the launch azimuths defined from the trajectory optimization were more precise and allowed for minimizing the risks of accidents.

This paper also highlighted the importance of flight safety analysis at all stages of the launch process, from defining launch parameters to actual operation. The use of advanced technologies, such as trajectory optimization software, can significantly contribute to improving flight safety and reducing risks during space operations from the Alcântara Launch Center.