

ABSTRACT

Numerical Analysis of the RX450 free-motion flight

by

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Rocket technology advancement is one of a few attempt that are aimed to reduced the operating and manufacturing costs of a rocket launch. Lembaga Penerbangan dan Antariksa Nasional(Lapan) are currently in the early stages of developing rocket, LAPAN's programs that will bring LAPAN engineers to have the ability to design and manufacture orbital rockets is in progress. The RX series rocket is a sounding rocket that is used for various experimental flight circuits to test various technologies that can help advance Indonesia rocket technology. A Rocket must follow a designated trajectory or an orbital flight path in order to deliver the payload into the correct orbit to achieve its mission successfully. So in order to design a suitable controller, it is important to obtain the free-motion flight which is a flight trajectory of the rocket. The free motion flight another are then compared to another flight that has an influenced of a small perturbation, the result of this comparison will show the differences of motion or attitude of the rocket that will determine the conclusion of this thesis.

Keyword: *Satellite, Lambert Problem, Mission Design*