

Scientific Objective and Infrastructure of Space Exploration (1)
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DEVELOPMENT OF A TWO STAGE SOUNDING ROCKET SEPARATION MECHANISM

Abstract

A sounding rocket was developed to release the payload and carry out scientific experiments at the altitude of 300km. In order to achieve the altitude requirements, the rocket used a structure of the two stages in series. A articulated snap ring separation mechanism was designed to separated the booster stage from the main stage. Comparing to the traditional snap ring mechanism, this mechanism was optimized, greatly improving the separation reliability. Through dynamic simulation and ground test, the two stages could separate quickly and reliably in the case of explosion of single or two explosive bolts. The flight test results also showed that the separation mechanism worked reliably, separated quickly and generated little disturbance.