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**Stable operation requirements for spacecraft attitude and orbit
control system**

航天器姿态和轨道控制系统稳定运行要求

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Foreword

This document is in accordance with the provisions of GB/T 1.1-2020 "Guidelines for standardization work Part 1: Structure and drafting rules for standardization documents" Drafting.

Please note that some of the contents of this document may involve patents. The issuing organization of this document does not assume the responsibility for identifying patents.

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Requirements for stable operation of spacecraft attitude and orbit control systems

1 Scope

This document specifies the overall requirements for attitude and orbit control systems for stable operation of spacecraft, data validity judgment, anomaly detection, software/ Hard fault handling, safety boundary detection and emergency safety mode.

This document is applicable to the design, application, and ground operation and maintenance of attitude and orbit control for all types of spacecraft.

2 Normative references

This document has no normative references.

3 Terms and definitions

The following terms and definitions apply to this document.

3.1 Device subsystem

According to the predetermined rules or ground control instructions, the spacecraft software and hardware are organically combined to complete the spacecraft attitude and orbit control.

3.2 anomaly

The phenomenon that the actual state does not match the expected state.

3.3 Fault

An event or condition in which a system or part of a system is unable to perform its specified function.

3.4 emergency safemode

When a spacecraft control system fails and cannot complete its scheduled mission, in order to ensure the energy safety, structural and mechanism safety and propulsion of the spacecraft, Agent safety, controls the operating mode of the system while waiting for processing.

4.1 Overall Design

This document proposes the following aspects. AOCS data validity judgment, anomaly detection, fault handling, safety boundary detection, emergency safety mode handling, etc.

The overall design requirements are as follows.

- a) With the overall mission of the spacecraft as the goal, AOCS should ensure that the spacecraft operates autonomously according to the expected attitude and orbit, and ensure that the control system functions Normal function and stable performance;
- b) When there is external interference or certain faults or abnormal conditions occur in the spacecraft control system, the AOCS should have certain system Robustness, capable of rapid anomaly detection and fault handling, keeping the spacecraft's attitude and orbit in an expected state or within a bounded domain of state sequences;