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Space environment - Meteoroid models

空间环境 流星体模型

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Foreword

This document complies with the provisions of GB/T 1.1-2020 "Standardization Work Guidelines Part 1: Structure and Drafting Rules of Standardization Documents".

Drafting.

Please note that some content in this document may involve patents. The issuing organization of this document assumes no responsibility for identifying patents.

This document was proposed by the Chinese Academy of Sciences.

This document is under the jurisdiction of the National Technical Committee on Standardization of Aerospace Technology and Its Applications (SAC/TC425).

1 Scope

This document provides models, selection methods, and application recommendations for meteoroid environments.

This document applies to the calculation of the number of space meteoroids, orbital evolution, and spacecraft in aerospace engineering missions and applications in scientific research and engineering.

Collision probability analysis of meteoroids, on-orbit collision avoidance of spacecraft, and meteoroid impact protection design.

2 Normative references

The contents of the following documents, through normative references within the text, constitute essential provisions of this document. Dated citations are not included.

For references to documents, only the version corresponding to that date applies to this document; for undated references, the latest version (including all amendments) applies.

This document.

GB/T 32452 Space Terminology - Space Environment

3 Terms and Definitions

The terms and definitions defined in GB/T 32452 and the following terms and definitions apply to this document.

Impact Flux

The number of meteoroids impacting a spacecraft or other space structure per unit time and per unit area.

mass density

The mass of a meteoroid per unit volume.

Huang Daoguang (zodiacal light) the white light that diffuses along the ecliptic plane, formed by interplanetary dust particles reflecting sunlight.

meteoroid

Small, moving celestial bodies that exist naturally in the solar system and whose diameters are typically between 10 μm and 1 m.

sporadic meteoroids occasionally appear Meteoroids that do not belong to any particular meteoroid stream.

Note: It may have originated from a variety of different asteroids and comets.

Meteoroid Stream

A group of meteoroids produced by a specific comet and distributed along similar orbits.

A model describing the meteoroid collision flux and evolution at the orbital location of a space target.