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RESEARCH ON COMMERCIAL OPERATION OF SPACE DEBRIS REMOVAL BASED ON LIABILITY INCENTIVES AND ECONOMIC INCENTIVES

Abstract

The remediation of space debris is critical to the sustainable use of space. Space debris governance has received considerable attention but has not made significant progress. In recent years, the satellite Internet development boom has once again begun. SpaceX's application for the deployment of the Starlink program was approved by the Federal Communications Commission in 2018, to deploy 12,000 satellites to provide space-based high-speed Internet services. Companies such as Oneweb, Telesat, O3b Networks, Boeing, and Google all plan to launch satellite constellations that provide Internet access services in low-earth orbit. China has also proposed the Hongyan Constellation program. Traditionally, the majority of commercial space revenues come from geosynchronous orbits with less space debris. The economic incentives for consciously developing the ability to actively remove space debris are still rare. The emergence and rapid implementation of the concept of "Space-based Internet" may provide a viable and measurable market for low-orbit space debris removalIt provides an economic incentive for all entities to actively promote space debris removal. On the other hand, the international community has yet to have a treaty that clearly defines the subject of space debris removal. The subject of responsibility is not clear, and it will inevitably bring obstacles to the removal of space debris. On the basis of building an international cooperation policy framework and operational mechanism, governments should, through treaties and legislation, clarify the responsible bodies of space debris removal as soon as possible. This will provide incentives for the promotion of space debris removal. Based on the analysis of liability incentives and economic incentives, we initially proposed a commercial operation model for space debris removal involving multiple entities including government, satellite operators and space debris removal technology developers.