ASBMUN 2025

COPUOS Topic Research Report

American School of Bombay

Written by Sukhyun Jang

Edited and revised by the ASBMUN Secretariat.

Forum: ASBMUN 2025

Committee: Committee on the Peaceful Uses of Outer Space

Topic: Addressing the challenges and risks of anti-satellite technology

Chair: Sukhyun Jang

Letter from Student Officers

Greetings, delegates! I would firstly like to welcome you all to the annual ASBMUN conference! My name is SUkhyun Jang and it is my utmost pleasure to serve as your deputy chair for this year's simulation of the United Nations Committee on the Peaceful Uses of Outer Space(COPUOS).

Since a few centuries ago, humans have gained interest in outer space that our predecessors have never been to. Consequently, outer space has opened us to unmeasurable possibilities for development. As more nations are involved in space activities, the necessity for legal frameworks for regulating resource exploitation, preventing conflicts, and promoting equality has also risen. In this context, the COPUOS takes charge of investigating international cooperation in the peaceful usage of outer space, encouraging space research programs, and studying legal problems arising from the exploration of outer space. One of the issues that COPUOS is currently facing is the anti-satellite(ASAT) technology. Although it provides some benefits for space exploration but its side affects have led to many discussions, making this a critical issue that COPUOS must consider.

Considering the critical nature of the agendas being discussed, every delegate of the COPUOS must remember that the decisions they take will have far-reaching consequences and that the opportunity afforded here is to potentially change the world profoundly.

Through the course of the three days of this conference, we trust that you all will discharge your duties aptly and have loads of fun in the process! Never forget that the aim of this conference is to enhance your understanding of the situation worldwide in the most interesting and enjoyable way possible! We look forward to seeing you all in committee and presiding over your deliberations! Good luck!

Sukhyun Jang

Deputy Chait] of COPUOS
ASBMUN 2024

Sukhyun Jang, jsukhyun26@aischennai.org

Introduction

On July 20, 1969, Neil Armstrong landed on the moon with his crew of Apollo 11. "That's one small step for a man, one giant leap for mankind." He delivered these legendary words the instant he stepped on the moon, and it was most certainly "one giant leap for mankind."

Before the 20th century, outer space was a mystical and unknown realm to humankind. Some thought of it as the place for gods, some as a mere sky, and some as the absence of everything. However, as technology developed so rapidly, exceeding our predictions, it became a place that humans could understand, explore, and experience. The understanding of outer space has opened us to unlimited opportunities. In fact, it allowed the development of satellite technologies, including GPS, GNSS, and many others, that are used for weather forecasting, earth observation, and space imaging.

However, as various nations recognized the importance of exploring the outer space, it also became the site of competition. The number of satellites orbiting the Earth increased at a surging rate, from two dozen in 1962 to 11,330 in 2023, according to the United Nations Office for Outer Space Affairs (UNOOSA). This has caused a significant problem of collisions in outer space. As the Earth's space is highly crowded, the flight paths of new spacecrafts must be managed with concern to avoid collisions between satellites or space debris, which could result in malfunctions. Still, managing the flight paths won't be able to solve the fundamental problem of congestion.

One of the main causes of this issue is the exploitation of anti-satellite technology(ASAT). ASAT usually involves a missile striking out an orbital satellite to destroy or disable it. By destroying nonfunctional satellites, it can reduce congestion in Earth's orbit, but it creates space debris that might remain in Earth's orbit. Apart from the generation of space debris, ASAT technology is causing many other problems regarding international peace and justice.

Definition of Key Terms

Anti-Satellite (ASAT) Weapons

Space weapons designed to incapacitate or destroy satellites for strategic or tactical purposes

Orbital Debris

The remains of defunct satellites, spent rocket stages, and other space debris that are circling Earth

Space Security

The protection of a space object, including its component parts, against the threat of intentional actions undertaken by external or unauthorized actors

Kinetic Energy ASATs

Weapons that destroy satellites by colliding with them at high speeds, using the energy of the collision to damage or destroy the target. These often create long-lasting space debris

Non-Kinetic ASATs

Methods of disabling or damaging satellites without physical impact. This can include cyberattacks, jamming signals, or directed energy weapons (e.g., lasers or microwaves)

Space Situational Awareness (SSA)

The ability to detect, track, and predict the movements of objects in space, which is critical for avoiding or responding to potential ASAT threats

Dual-Use Technologies

Technologies that can serve both civilian and military purposes

Space Arms Control

Agreements or treaties aimed at regulating or limiting the use of space-based weapons, including anti-satellite technologies.

Strategic deterrence

The action to dissuade adversaries from launching a nuclear attack

Background Information

ASAT is a technology specially designed to damage or destroy satellites in orbit. There are some major consequences in the context of space security and military strategy while utilizing the technology, as the ASAT technology poses significant challenges, regarding the safety and sustainability of space operations. The ways of utilization of this technology vary by countries, ranging from strategic deterrence to tactical military operations. In modern periods, the growth of interest in outer space military operations and competitions posed the concerns associated with the ASAT technology.

The original form of ASAT technology typically included missiles that can target satellites by physically colliding with them in the orbit. Early tests, such as the U.S. “Operation Fishbow” in the 1960s and the Soviet Union’s ASAT tests, showed that destroying satellites with direct physical contact was

feasible. However, in recent years, the ASAT technology has developed and expanded to include non-kinetic methods, such as cyber attacks and jamming signals that can mess up the satellite control systems. This advancement has introduced diversified methods that can disable space assets, ultimately causing the management of space security to be more complicated.

The first major concern of ASAT technology is the generation of space debris. When ASAT technology destroys a satellite, especially with kinetic ASAT technology, the shattered fragments can remain in the orbit. This is a serious problem as they can further collide with other operational satellites causing critical damage, which can also lead to conflict between nations(if the two satellites are from different nations), economic issues, and the discomfort from delayed service that the satellites used to provide. In fact, in the 2007 Chinese ASAT test, an old weather satellite was destroyed, and thousands of pieces of debris were created, consequently, many of them remain in the orbit today. This event raised awareness in nations about the problems related to ASAT technology and its impact on the sustainable development of the outer space.

The second concern of ASAT technology is geopolitical challenges. ASAT may be used by nations for military purposes, which will likely result in increased tension based on the outer space. This is a major issue as it is related to the militarization of space, which has a potential for the third World War and interrupts the peaceful and sustainable usage of outer space, which are the major goals of this committee, COPUOS.

Third, international legal framework about the usage of space and space weapons is underdeveloped. The 1967 Outer Space Treaty, one of the bases of international space law, forbids the usage or placement of weapons of mass destruction in the Earth’s orbit but does not specifically mention ASAT technology. Many other treaties also aim to enhance the peaceful use of space, but an effective legal structure specifically addressing ASAT systems still doesn’t exist. This gap in the legal framework regarding ASAT technology may lead to certain nations’ exploitation of ASAT technology without much concern.

Major Countries and Organizations Involved

United States

As the nation with the most satellites in Earth’s orbit, the United States is closely related to the issue of anti satellite technology. In fact, the U.N. has put effort into banning destructive ASAT tests, introducing a UN resolution in 2022. The proposal gained significant support from other nations. Furthermore, the U.S. Space Force's 18th Space Defense Squadron works in monitoring orbital satellites and preventing any collision between them by utilizing space situational awareness (SSA) systems.

Space situational awareness (SSA) is the knowledge, characterization, and practice of tracking space objects and their operational environment, which is closely related to the issue of space debris.

Russia

Russia has conducted an ASAT missile test in 2021. They struck a Russian satellite [COSMOS 1408] and created a debris field in Earth's low orbit. Russian analysts and military leaders argue that the test was to restore strategic stability against U.S. attempts to attain "comprehensive military advantage" in space. In fact, the 2021 ASAT test wasn't the only test conducted by Russia. Russia has also tested co-orbital ASAT systems that target satellites beyond low-earth orbit and many others. Furthermore, Russia is aiming to develop an ASAT technology that uses nuclear power. Such technology is more destructive than other ASAT as it can destroy satellites in a wide area.

China

As the nation with the second most satellites in Earth's orbit, China has long called for international talks to set limits on military space activities. However, it was rejected by the Bush administration, which also wanted to develop and deploy ASAT weapons. This has granted China the legal freedom to test an ASAT weapon, and China did conduct an ASAT test on 11 January 2007. They used a medium-range missile to launch an unknown payload that hit the Feng Yun polar-orbit weather satellite which was approximately 865km above the Earth on that day. By doing so, China has severely weekend its own status in the call for international limitations on military space activities. Some have interpreted the test as a Chinese show of strength and a warning to Washington that its space assets would be vulnerable to attack if the United States and China ever went to war. Others view the test as Beijing's attempt to stimulate the United States to drop its long-standing opposition to Chinese and Russian-advocated negotiations on prevention of an arms race in outer space

Asia-Pacific Space Cooperation Organization (APSCO)

APSCO is a non-profit, international, and inter-governmental oraganization which promotes the multilateral development and cooperation. APSCO specializes in space science, technology and applications, specifically establishing and maintaining an orbital databases: Satellites, space debris, and near-Earth objects (NEOs). As APSCO pursues the sustainable development of outer space, it promotes the international community to raise awareness regarding the debris tracking, data sharing and incident prevention. In addition, APSCO opportunities the educational research and programs on satellite technologies and disaster management, enhancing the community's interest along with the cooperation in the peace of space development.

Timeline of Events

Date	Description of Event
October 4, 1957	The Soviet Union launches the first artificial satellite, Sputnik 1. The U.S. was triggered by this event to invest in exploring satellite and ASAT technologies due to fears of orbital weapons
April 1960	The Soviet Union starts developing a co-orbital ASAT system, Istrebitel Sputnikove(IS) program.
November 1, 1963	The Soviet Union conducts its first test on the Polyot interceptor, an ASAT technology, as a part of the IS program
April 12, 1964	The second Polyot test is conducted by the Soviet Union
October 27, 1967	The Soviet Union tests a simpler version of the IS system using the Tsyklon launcher
November 1968	The Soviet Union successfully destroys Kosmos 248 using Kosmos 252 in a co-orbital ASAT test
February 1973	The Soviet Union declares its IS system operational
September 13, 1985	The U.S. conducts its first successful ASAT test with an ASM-135 missile launched from an F-15 fighter jet, destroying the Solwind P78-1 satellite
January 11, 2007	China conducted its first ASAT test, which involved destroying the Feng Yun-1C weather satellite with a ballistic missile. Over 3000 pieces of space debris were generated from the test, raising concerns about space safety

February 21, 2008	The U.S. destroyed a satellite(USA-193) that wasn't functioning using a ship-launched SM-3 missile in Operation Burnt Frost.
March 27, 2019	India conducted its first successful ASAT test, Mission Shakti, which involved destroying Microsat-R at an altitude of about 300km. From this test, India became the fourth country to have ASAT technology
November 15, 2021	Russia conducted a destructive ASAT test by destroying Cosmos 1408. Over 1500 pieces of space debris were created, drawing international criticism
April 18, 2022	The United States became the first country to announce a ban on destructive ASAT missile tests and introduced a UN resolution regarding the limitation of using ASAT technologies.
May 2024	Russia launched Cosmos 2576, suspected by the U.S. to be equipped as counter-space weapon capable of targeting satellites in low Earth orbit.

Relevant UN Treaties and Events

1. **Outer Space Treaty(1967)(**Also known as the Treaty on Principles Governing the Activities of States in the Exploration and use of Outer Space, including the Moon and Other Celestial Bodies)
    - it prohibits the use of nuclear weapons or any other weapons of mass destruction in Earth's orbit or on any other celestial bodies.
    - It doesn't 'ban' ASAT systems
    - It encourages international cooperation to maintain peace and security in outer space
2. **Proposed Prevention of an Arms Race in Outer Space(PAROS) Treaty**
    - It bans the use of any force against objects in outer space.
    - Been discussed in the Conference on Disarmament(CD) since the early 1980s
    - A draft text for the PAROS treaty was submitted to the CD in 2014 by China and Russia and was revised in 2014

- **"Reducing Space Threats Through Norms, Rules, and Principles of Responsible Behaviors" - (December 2023)(A/78/407)**

The resolution mainly focuses on the work to foster responsible behaviors in outer space, which is necessary to reduce space threats. It was adopted by a vote of 166 in favor and 9 against in the General Assembly. It emphasizes the need to develop norms and rules to mitigate each nation's use of outer space, ultimately aiming to reduce the conflict between them. The resolution received broad support, which indicates the UN member states' concern about the sustainability and peace in outer space.

- **"Further Practical Measures for the prevention of an Arms Race in Outer Space" - (December 2023)(A/C.1/78/L.55)**

The resolution addresses the challenges of anti-satellite technology and prevents the militarization of outer space. One of the important points of the resolution is the establishment of a Group of Governmental Experts (GGE). GGE often undertake a study on issues of concern and report findings at the UN General Assembly. In this issue, GGE can detect and monitor the nation's arms race in outer space. They also aim to develop recommendations for an international legally binding instrument to focus on preventing the use of weapons in outer space. The focus areas of the resolution not only include the prevention of weapon placement but also the transparency and confidence-building measures and legally binding instruments. The resolution encourages member states to engage in the effort to address newly recognized threats in outer space.

Previous Attempts to Solve the Issue

During the Cold War, the U.S. and Soviet Union developed several treaties and agreements to address the risks of ASAT technology. For example, the Anti-Ballistic Missile (ABM) Treaty (1972) prohibited intervention on each other's satellites to promote the peaceful usage of outer space. Also, Strategic Arms Limitation Treaty (SALT I, 1972) declared a freeze in missile systems to avoid the increase in arms race between the two nations, but it didn't specifically ban ASAT weapons. Furthermore, the treaty recognized the importance of satellites for each nation and the need to protect them. By including such details, these agreements reduced the risk of targeting each other's satellites for military or political purposes. However, they didn't ban ASAT weapons, leaving it possible to continue ASAT testing and development, which has the potential for disrupting the space peace.

U.S. President Jimmy Carter(October 1, 1924 – December 29, 2024) sought to completely ban ASAT with the Soviet Union. His belief was that ASAT technology was the main factor that could lead to the arms race in space. He actively engaged with the multilateral U.S.-Soviet negotiations on ASAT

weapons, which took place in 1978 and 1979. However, the two sides couldn't agree on what constituted an ASAT weapon, which could result in greater or lesser impact of an agreement to each nation. The Soviets argued that the U.S> space shuttle program must be included in the treaty as a potential ASAT system, but Carter rejected this. Also, there were several other many other issues that made the negotiation difficult. For example, the Soviet's invasion of Afghanistan in December 1979 broke the armistice of the two nations, halting the negotiations' progress. Furthermore, both nations faced difficulties in distinguishing dual use technologies, which made the treaty complicated.

Possible Solutions

The creation of international policies to forbid any space actions that can create more than a certain amount of space debris. Since space debris is one of the major concerns of ASAT technology, setting it as a measure to limit the use of ASAT will be effective. It can allow some highly mitigated ASAt technology that is essential for certain projects, while forbidding any space actions that can cause a significant impact on space. Also, this policy can lead to technological development by encouraging nations to develop techniques to minimize the creation of space debris

Encouraging member nations to utilize non-kinetic ASAT technology rather than kinetic ASAT. As kinetic energy ASAT creates far more space debris than other ASAT, shifting nations' priority into utilizing non-kinetic ASAT will decrease the amount of space debris in Earth's orbit. By not banning the whole ASAT, nations are more likely to accept and follow this policy.

Enhancing public-private partnership. The issue of ASAT technology is not only for governments but also relatable to commercial corporations, which possess satellites or utilize services that machineries in Earth's orbit provide. Therefore, by informing the public about this connection, governments will be able to expect some support from commercial corporations. They can fund the development of new ASAT technology that minimizes space debris and can participate in creating more strict and effective regulations.

Connection to ASBMUN Theme: SDG 16 Peace Justice and Strong Institutions

The utilization of ASAT technology directly conflicts with SDG 16 as outer space is not a property of one nation, but is a resource that every nation has the right to access. If one nation exploits ASAT technology without concern and degrades outer space, every other nation will receive negative consequences, which is a disruption of the international justice. Also, as space debris created by the use of ASAT technology can collide with other satellites from different countries, it can increase international

tension. Therefore, mitigating the use of ASAT technology is an important mean that is directly associated with the SDG 16

Bibliography

Robert.wickramatunga. “United NationsOffice for Outer Space Affairs.” *COPUOS*, www.unoosa.org/oosa/en/ourwork/copuos/index.html. Accessed 6 Mar. 2025.

Wall, Mike. “3 More Countries Pledge Not to Conduct Destructive Anti-Satellite Tests.” *Space.Com*, Space, 11 Apr. 2023, www.space.com/netherlands-italy-austria-destructive-asat-pledge.

Promoting International Cooperation to Avoid Collisions between Satellites - Carnegie Endowment for International Peace, carnegieendowment.org/2023/09/20/promoting-international-cooperation-to-avoid-collisions-between-satellites-pub-90579. Accessed 5 Mar. 2025.

“7 Countries with the Most Satellites in Space.” *IndiaToday*, India Today, www.indiatoday.in/visualstories/education/7-countries-with-the-most-satellites-in-space-203806-20-01-2025. Accessed 6 Mar. 2025.

“Russian Direct-Ascent Anti-Satellite Missile Test Creates Significant, Long-Lasting Space.” *United States Space Command*, 15 Nov. 2021, www.spacecom.mil/Newsroom/News/Article-Display/Article/2842957/russian-direct-ascent-anti-satellite-missile-test-creates-significant-long-last/.

“Chinese Anti-Satellite Weapon Experiment; What Now?” *Federation of American Scientists*, 26 June 2024, fas.org/publication/chinese_anti-satellite_weapon_/.

“Chinese Satellite Destruction Stirs Debate.” *Chinese Satellite Destruction Stirs Debate | Arms Control Association*, www.armscontrol.org/act/2007-03/chinese-satellite-destruction-stirs-debate. Accessed 6 Mar. 2025.

APSCO Bridge the Hainan Space, www.unoosa.org/documents/pdf/psa/activities/2022/UN-China/Presentations/3-5_Yansong_Xu.pdf. Accessed 5 Mar. 2025.

“General Assembly Adopts 56 First Committee Texts as Geopolitical Realities Test Sustainability of Non-Proliferation Regime, Scuttle Consensus | Meetings Coverage and Press Releases.” *United*

Nations, United Nations, press.un.org/en/2023/ga12568.doc.htm. Accessed 6 Mar. 2025.

2007 Chinese Anti-Satellite Test Fact Sheet, swfound.org/media/9550/chinese_asat_fact_sheet_updated_2012.pdf. Accessed 5 Mar. 2025.

Casl. "Challenges of Space Security Governance." *Centre for Aviation and Space Laws*, 24 Apr. 2024, nujs.edu/casl/challenges-of-space-security-governance/.

Gonzalez, Alejandro. "ASAT-Related Space Debris; a Major Issue on the Horizon." *Airport Technology*, 15 Aug. 2022, www.airport-technology.com/comment/asat-space-debris/.

"Vought ASM-135A Anti-Satellite Missile." *National Museum of the United States Air Force™*, www.nationalmuseum.af.mil/Visit/Museum-Exhibits/Fact-Sheets/Display/Article/198034/vought-asm-135a-anti-satellite-missile/. Accessed 6 Mar. 2025.

Appendix or Appendices

https://www.unoosa.org/oosa/documents-and-resolutions/search.jspx?view=documents&f=oosaDocument.doctags.doctag_s%3ACOPUOSRDOCS

(UN resolution database

https://www.unoosa.org/oosa/en/ourwork/copuos/index.html

(Description of the committee COPUOS)

https://www.unoosa.org/oosa/en/ourwork/copuos/history.html

(The history of COPUOS)