

14TH IAA SYMPOSIUM ON SPACE DEBRIS (A6)
Mitigation and Standards (4)

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Abstract

Space debris: Active cleaning versus mitigation. Technical and Economic dilemma The fast growth of small and nanosatellites missions from several countries have raised concerns amongst many nations. The need for regulatorio frameworks and technical solutions is imperative. Several projects for actively removing debris are under way based on novel concepts and are a fertile ground for technology development in key areas of the space technology, such as materials, control, navigation and automated spacecraft swarms and constellations, amongst others. However up to date none of these techniques have got positive results and are in the concept testing phase at th best. Testing and experimentation involves costly and risky missions. While this missions and concepts are capturing the imagination of the public, truth is that the problem keeps growing and the actual international regulatory framework need a revision. The number of debris bigger than 10 cm³, especially in LEO orbits has arisen concerns about the potential damage they can inflict on strategic structure for welfare and new space missions in the same orbit. Nowadays the proliferation of small satellites in UHF /VHF frequencies have prompted action from IUT and several states are organizing in a more structured way their procedures for approval of missions involving univerversity satellites. The question is: Are we moving in the right path? Is mitigation rather than removal, the answer? A bigger impact should be obtained if technology that is already in development is used in nano and microsatellites missions in LEO orbit. Some technologies are reaching the feasibility phase and would be cost effective in fewer years than recovery or removalof debris. Small thrusters, attitude control for nanosatellites and other technlogies would make controlled de-orbitation a reality in this missions, while keeping them cost effective. Life cycle analysis and economics are used, in combination with identification of key areas and technologies, combined with simulation of orbital mechanics in order to demonstrate such argument and open an alternative path for university and emerging countries missions to be developed.