

SPACE DEBRIS SYMPOSIUM (A6)
Mitigation and Standards (4)

Author: Mr. Pouyan Azari
University of Würzburg, Germany

Mr. Stephan Busch
University of Würzburg, Germany
Prof. Klaus Schilling
University Wuerzburg, Germany

GENERIC MODEL FOR THE SPACE DEBRIS MITIGATION ANALYSIS PROCEDURE OF
CUBESATS**Abstract**

Every day new space debris sources are accumulating the important orbits around the Earth. These risk the human space flights and also the satellite missions, adding a lot more challenges and concerns to space system designs. The possible collisions with debris and cascade events after that could be devastating to the satellites and also human astronauts.

National and international space agency have some regulations regarding space debris and every spacecraft in order to get a launch approval must comply with them. On the Other hand, Cubesats are trending now with above 75 launches only in 2013. There are even more Cubesats lining up to launch for 2014 and beyond. The major cause would be their cheap price and the less complex system and also easier launch. As a result, they could be a possible source to the space debris problematic and their debris mitigation procedure and analysis should be on the agenda.

Most of the Cubesats share a common shape and structure, with their orbit and weight maybe varying. Therefore it is possible to create a generic model which can determine different space debris mitigation aspects for a Cubesat. This model could be easily used for the future missions to have their Space Debris Mitigation analysis done, without complex and time- consuming simulations.

This paper goal is to describe the generic model for the space mitigation analysis of Cubesats with the help of different simulation tools like MASTER 2009, DAS and DRAMA. There will also be different generic satellites defined to these tools. All the generic satellites and their orbits will have the worst case scenarios as it is possible. To comply with space debris regulation, there are boundaries that must not be crossed. With the worst case scenario, the limit values for different satellite characteristic could be determined, so the satellite could fully satisfy the regulations.

The result of this paper could boost the speed for the space debris mitigation analysis related to the Cubesats.