Improvement of methods for evaluating the spacecraft pressure wall penetration probability

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The article suggests the ways to improve the methods for evaluating the probability of the spacecraft pressure wall penetration caused by meteoroids and space debris impacts. The problem of evaluating the penetration probability is viewed in the form of ballistic equations, which define the structure resistibility to high velocity impacts in relation to the outlet data of spatial distribution models of hypervelocity particles (micrometeorites and space debris) in space. Currently this problem is solved with the help of proprietary technology which uses the conjunction of distribution particles models with ballistic equations. It takes a lot of time to calculate large amounts of the models initial data. However, this problem can be solved by the enhancement of algorithms of interaction between the output data of distribution particles models and the unit responsible for the solutions of ballistic equations. The accuracy of the evaluation obtained is increased due to the improvement of calculation methods for conditional probability of the pressure wall penetration.

Keywords: *ballistic equations, probability of penetration, spacecraft, space debris, meteoroids and space debris impacts, structure elements*

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