

Ballistic spacecraft double wall simulation at high speed collision

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The article considers an engineering simulation method to calculate the ballistic limit depending on the double wall at the high-speed collision, which can be used in assessing space vehicles structural elements stability under the man-made meteor particles influence, looks at the method calculations results for two model variants equivalent to spacecraft design standard elements. We selected as models the fuel tank fragments with protection and a radiator cross-section with the built-in thermal tube, analyzed the proposed method application at increasing the bumper wall thickness for the fuel tank design that gave a positive result. The article shows various approaches validity while assessing spacecraft risks from the space debris or meteoroid impact damage - impact testing experimental results, numerical and engineering techniques.

Keywords: ballistic equation, high-speed collision, spacecraft, screen protection, experimental studies, numerical modeling.

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