

NUMERICAL ANALYSIS OF DYNAMICS OF FLIGHT OF THE FRAGMENTS

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Assessment of the flight dynamics of fragments is based on models created from differential equations and experimental results. The trajectory of fragments moving under the influence of air-drag and gravity force can be determined using the differential equations of the point mass trajectory model. The parameters of the fragmentation process are determined from experimental studies and finite element analysis. The kinetic energy is calculated using the point mass trajectory differential equations, where fragments move through the atmosphere losing energy to drag force. The drag force depends on the air density, the drag coefficient, the speed, and shape of the fragment. The trajectory model has been composed for determining a fragment moving under drag and gravity forces. The trajectory model has been converted into the first-order system of nonlinear ordinary differential equations and solved using the Runge-Kutta method. The numerical results are given for one selected fragment. Initially, simplified drag flow is utilized.



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