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Science Results from Ground Based Research (4)

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MATHEMATICAL SIMULATION OF A DROPLET BREAKUP UNDER THE EFFECT OF A LASER
PULSE**Abstract**

Droplet-laser interaction is a process being encountered in many Space applications: igniting fuel-oxidant mixtures in engines of different types, removing small debris fragments from low Earth orbits, etc. The present paper describes the results of ground-based research of the process of droplet breakup under the effect of a laser pulse. The laser pulse effect is simulated as momentum applied to the boundary having Gaussian distribution both in space and time. The results of simulations testify that fragmentation of a droplet begins first in the rarefaction wave following the converging compression wave caused by the pulse. The second stage of fragmentation begins on compression wave coming to the opposite border of the droplet and reflecting from the free surface of the droplet in the form of a strong rarefaction wave.