Numerical-theoretical analysis of destruction of liquid drop under effect of air shock wave ALLA GEORGIEVSKAYA, VICTOR RAEVSKY, RFNC-VNIIEF — Direct numerical simulation of liquid fragmentation in gas flow is rather complicated. It is caused by the need for specifying a large number of points, and, therefore, use of superpower computers. On the other hand, surface tension is the characteristic, which determines drop sizes. It is very difficult to simulate this characteristic in calculations. When using the presently available techniques, numerical calculations reproduce some moments of interaction between liquid and air shock wave only at the qualitative level. However, these calculations allow obtaining the change of strain rate average in drop volume versus time, and finally estimating the average particle sizes. We performed similar calculations for drops with different initial diameters. It allowed estimating the influence of scale effect on average size of particles and their final distribution in sizes. Results of the numerical-theoretical investigations are compared to results of experiments, which were performed in VNIIEF.

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