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This paper overviews the main results of the solution of current problems in the dynamics of liquid-propellant rocket engines (LPREs), liquid-propellant launch vehicle (LV) pogo stability, the dynamics of vibration protection systems, blade machine gas-dynamics, and the dynamics of hydraulic systems with cavitating restrictors. These results are as follows. Coupled longitudinal and longitudinal bending oscillations of the feed lines and the liquid in hydraulic systems with cavitating LPRE pumps were simulated mathematically. The start of a sustainer LPRE with generator gas afterburning was simulated mathematically. The effect of damping the oscillations of individual dynamic links of the liquid-propellant LV body on the LV pogo stability and longitudinal oscillation amplitude was studied numerically. A technique was developed for the theoretical prediction of dynamic loads on liquid-propellant LV upper stages and spacecraft during the orbital injection. The pogo stability of new liquid-propellant space rockets of tandem and pack configuration was predicted theoretically at the draft design stage. A new pneumatic system was proposed for the Sich-2 spacecraft to protect it against longitudinal vibration loads during the orbital injection. A vibration protection system was designed to protect operators of vehicles of differ-

ent purposes from impact and alternating loads. Up-to-date methods were developed for aerodynamic shape refinement of aircraft gas-turbine engine compressor blade channels. Unsteady liquid flow in a hydraulic system with a cavitating plate orifice was simulated numerically. Topical problems of solids grinding in a liquid medium were solved on the basis of the development and making of an experimental cavitation pulse plant for the production of fine-dispersed media and investigations into the hydrodynamics of new industrial devices with cavitating components.

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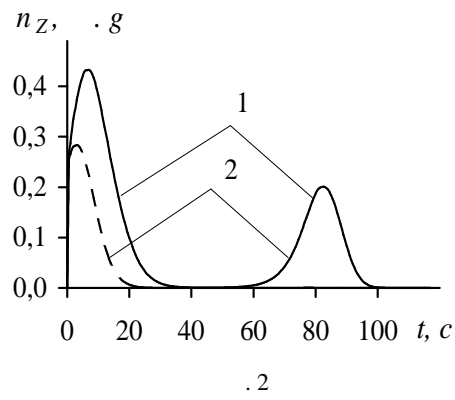
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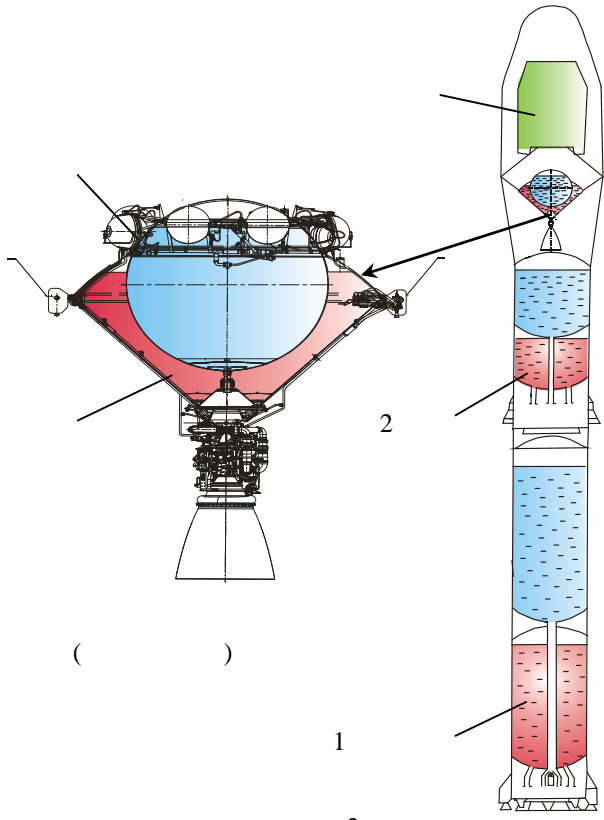
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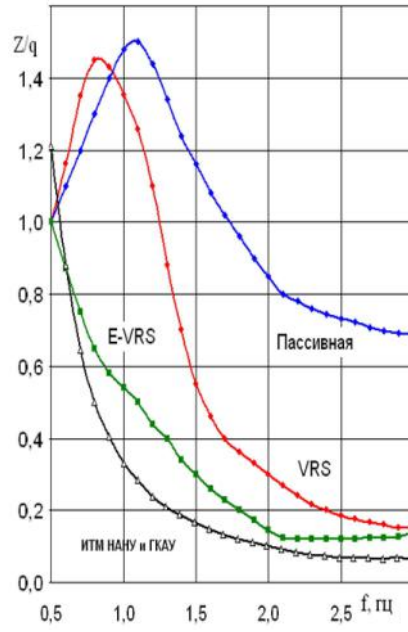
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