

## **Spherical particle dynamics at oscillations in tubes in the shock wave field**

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### **Abstract**

© 2016, Pleiades Publishing, Ltd. The behavior of spherical particles with various geometric and physical parameters is experimentally investigated at the stimulated longitudinal gas oscillations in closed and opened tubes as well as in the external wave field near subharmonic resonances. The temporal dependences of the oscillating particle coordinate are obtained for different tube lengths and excitement frequencies. It is shown that, inside the tube, a particle moves, performing the longitudinal oscillations, from the opened end to the piston. Outside the tube, a particle moves from the opened end to the external wave field, without oscillations and with nonlinear coordinate increase in time. Also investigated is the influence of the particle weight and diameter and of the gas excitement frequency on the oscillation amplitude of the particle and its average velocity. The nonmonotone character revealed the dependence of the average velocity of the spherical particle on the gaseous column oscillation frequency at passing through the subharmonic resonance frequencies.

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