

SPECIAL FEATURES OF EFFECTS OF SIZES OF GAS-DISPERSIVE FLOW PARTICLES ON THEIR INTERACTIONS WITH CHANNEL WALLS

Interactions between the gas-dispersive flow particles and the channel walls under conditions of the velocity gradients for the carrier gas in a boundary layer are examined. The effects of the particle sizes on their motion through horizontal plane channel under transient and stationary conditions are studied using the known dependencies of Magnus and Saffman forces. The Magnus force has the determining influence on the particle motion in the boundary layers at the lower and upper walls of the channel depending on the particle size. Collision of fine dispersive particles against the channel walls at a small velocity of the carrier gas is characterized by multiple small-amplitude recoils within the boundary layer, whereas for large particles, whose sizes are in excess of the magnitude of a viscous layer, collisions are single. The study of the particle motion in the carrier gas flow considering their interactions with the channel walls is of independent importance for specific classes of gas-dispersive systems. It can be employed to build the numerical calculating Euler-Euler and Euler-Lagrange models of two-phase gas-dispersive media considering the effects of particles on the carrier gas parameters.

Keywords: *gas-dispersive flow, particle, plane channel, channel wall, computation, Magnus force, Saffman force, gradient flow, boundary layer, mechanical trajectory.*

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