

WIG –craft motion control concept

The problem of Wing-in-Ground effect most affective use in WIG-craft flight by minimization of the average geometrical altitude of flight above sea waves is considered in the paper. Two concepts of vehicle motion in longitudinal plane are compared. The new analytical formulae are developed. They are simple and may be used for approximate estimations only, but permit to select the best concept for vehicle altitude stabilization. The main advantage of the used general approach consists in making important conclusions regarding the limited effectiveness of WIG-craft flight above the disturbed sea surface. It is proved that only large WIG-craft could provide the essential fuel saving in controlled flying close to the disturbed surface. For small WIG-craft fuel saving against the plane mode of flight is not essential, and other advantages of WIG-craft have to be the decisive ones in competition with planes. The modern means of automatic control permit to realize any perfect dynamic features of vehicle, and it is important to select the best concept of flight control before developing the control laws for the certain vehicle. This task of estimating the best ways for perfecting of automatically controlled WIG-craft is solved in this paper and it is useful for real designing of control law.