

Summary of the doctoral dissertation

"The use of an electronic control system ESP track in the automation of the evasive maneuver suddenly appearing obstacle"

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The doctoral dissertation is devoted to the development of an integrated system model (consisting of an active AFS steering system and an ESP stabilization system), controlling the maneuver of passing round a suddenly appearing obstacle by a virtual truck.

The thesis presents a general concept of vehicle control during passing round a suddenly appearing obstacle by a virtual truck model with the use of the following models: AFS active steering system, ESP stabilization of driving truck and the integrated AFS + ESP control system.

In the simulation studies on vehicle control during passing round a suddenly appearing obstacle, an expounded model of a truck was used as a virtual control object, which was thoroughly experimentally verified in laboratorial and road tests. In the first stage of the conducted simulation tests of the virtual truck model were performed in order to learn about its driving properties in various road and operational conditions, taking into account the boundary traffic conditions. Then, using a virtual vehicle model, the quality and effectiveness of action of the AFS automatic steering system, the ESP stabilization of driving track system and the integrated vehicle control system AFS + ESP during the maneuver of the sudden lane change on different road surfaces at different speeds.

The summary of the doctoral dissertation presents the comparative test results of a virtual vehicle model equipped with the AFS system and the integrated AFS + ESP control system. On the basis of the conducted simulation tests presented in the thesis, constructive conclusions were drawn up, indicating the need to use the integrated AFS + ESP control system during the maneuver of passing round a suddenly appearing obstacle.

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