

SUBJECT OF STUDENT INVOLVEMENT IN SCIENTIFIC ACTIVITIES

Topic title: Testing the effectiveness of the braking system
Research aim: perform a study of the braking efficiency for braking systems with and without ABS, simulating the conditions of different friction coefficients between the wheel and the road surface. To compare the different control models of the ABS of the laboratory braking bench.
A brief description of the execution of the theme: wheel and the road friction is the primary factor of safe traffic in all road traffic situations. One of the common reasons for loss of traction is the wheel locking during braking, but the wheel anti-locking systems used in cars allows to brake effectively and not lose traction with the road surface, while maintaining the controllability of the vehicle and ensuring the braking process. Different manufacturers of brake systems with ABS use different anti-lock algorithms. This study aims to find out which brake control algorithm with ABS system is the most effective in simulating different conditions of road adhesion coefficient. It is planned to use the laboratory bench of Inteco - brake system with ABS to carry out the research. Two wheels are installed on the stand, one of which simulates the road surface and the other a car wheel. The sensors record the angular displacements of both wheels and when the set speed of the car is reached, the braking process (with or without ABS) starts. The laboratory bench has an interface with the Matlab Simulink control model, so all the actual data is displayed in real time, and it is also possible to simulate the braking process after adjusting the existing or introducing a new braking model with ABS.
Scientist/teacher proposing the topic: lecturer Šarūnas Šukevičius