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#### عنوان مقاله:

Effects of suspension normal force control on an opti-mal anti-lock braking system performance

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#### خلاصه مقاله:

In this paper, the effect of tire normal force control on the anti-lock braking system (ABS) performance is studied through the integration of suspension and braking control systems. The ABS performance in generating the maximum braking force is mainly affected by tire normal force pro-duced by the suspension system. In this study, two decentralized controllers are designed using a quarter-car braking and suspension models. In this integrated control strategy, each system is con-trolled separately, but the suspension system can cooperate with the ABS by taking its information into account to achieve a certain function which is to stop the vehicle in the shortest distance. To achieve this aim, the anti-lock braking system is controlled by a nonlinear optimal control strategy in which the reference model of the wheel slip is adapted with tire road holding force changes. On the other hand, a fuzzy controller is operated for the suspension system to control the tire normal force and sprung mass acceleration simultaneously. Simulation of this study is derived during hard braking on a poor quality white noise road. The stopping distance is compared in the cases of pas-sive suspension and controlled semi-active suspension. The results show that the normal force con-trol strategy can be helpful to increase the ABS controller performance so that it decreases the stop-ping distance in the real situation

### کلمات کلیدی:

Semi-active suspension; Anti-lock braking system; Integrated control; Fuzzy con-trol; Nonlinear Optimal control

# لینک ثابت مقاله در پایگاه سیویلیکا:



