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Optimization of robust and LQR control parameters for half car model using genetic algorithm (Article)

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Abstract

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To test the performance of the half car system, two types of controller are used, namely Robust H-infinity control and LQR control. Robust H-infinity and LQR controller is designed to control the suspension system and to reduce the vibrations in the car and to improve handling. A half car model is considered in this research to study the effects in passenger owing to different road profiles. The weights of Robust H-infinity and LQR controller are obtained using Genetic Algorithm on a half car model with two different types of usually existing road disturbance.The design parameters of both the active controller varies with various road profiles. This proves that particular design parameters in Robust and LQR controller do not have the ability to adapt to the variations in road surface. Furthermore, active controllers significantly improve the performance of the system in all aspects when compared to passive system. © 2019 SERSC.

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