On suspension design and passengers comfort

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Abstract: In this work, we consider the dynamical model of a half car with passengers. It is assumed that the characteristic of the passive suspension is linear. The vibration behavior of the system has been studied by numerically simulating the model over different roads with single bumps. By varying the mass of the passengers within a given range the variation and range of the vibration levels of the dynamical system has been analyzed. Initially, the vibration level of the system is minimized using genetic algorithm and the suspension parameters are determined. This is done by considering constant mass of the passengers. With these parameters the vibration analysis is further done by varying the mass of the passengers in a suitable interval.

Keywords: optimization, suspension, genetic algorithm, dynamical system, half car.

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