Review of: "Simulation of Control System for a Half-Car Suspension System for Passenger Vehicle Application by Designing an LQR Controller"

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Potential competing interests: No potential competing interests to declare.

While LQR exhibits commendable robustness, the model under consideration confronts random excitations, such as a vehicle navigating rough terrain. Consequently, certain states may elude complete observability, notably vertical displacements, velocities, and accelerations. In this context, LQR's efficacy diminishes due to its reliance on full state feedbacks. The optimal choice in this scenario is the implementation of LQG, leveraging a Kalman filter to furnish an optimal estimate of the system states. Introducing a state estimator, however, results in a marginal loss of robustness in the control system. The authors might contemplate an alternative approach, opting for either Loop Transfer control design or H_infinity controller design, to cultivate an optimally robust control system. Essentially, the utilization of LQR alone in this study fails to introduce any noteworthy novelty or contribute significantly to the field.