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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The paper investigates the application of a 4-DOF half-car active suspension system with an LQR controller to address challenges in vehicle handling, ride comfort, and driving dynamics. The study is positioned within the context of the continually evolving field of inventive vehicle system design, emphasizing the need for advancements in these key performance areas. Some possible improvement for the mentioned paper are:

1.   How comprehensively are the regulated parameters, including unsprung masses, pitching dynamics, and sprung masses, addressed in the mathematical model of the active suspension system? Does the paper provide insights into the considerations and trade-offs made during the design of the LQR controller for optimizing ride comfort and handling?

2.   In what specific ways does the paper compare the performance of the proposed active suspension system (PSS) with the traditional passive suspension technology? Are there quantitative metrics or data presented that highlight the superiority of the PSS, and how reliable are these comparisons?

3.   How well do the chosen simulation scenarios, involving two bumpy sinusoidal roads and a random road input, contribute to the overall evaluation of the active suspension system? Are the results under these scenarios reflective of real-world driving conditions, and do they provide a comprehensive understanding of the system's robustness?

4.   To what extent do the simulation results presented in the paper translate to practical improvements in vehicle handling, ride comfort, and driving dynamics? Are there specific real-world applications or scenarios where the proposed active suspension system with the LQR controller would be particularly advantageous?

5.   What suggestions or avenues for future research are proposed by the authors to further enhance the active suspension system or address any identified limitations should be discussed?