

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.

Dear Editor

The research abstract and introduction are professionally written, with a clear presentation of the study's purpose, methods, and findings. The focus on a specific, relevant problem in vehicle dynamics, coupled with a methodical approach and clear results, suggests a high-quality study. Minor improvements in accessibility and clarity, along with proper citation formatting, would further enhance its professionalism. The provided research abstract and introduction demonstrate a well-structured and professional approach to studying the control system for a half-car suspension system using an LQR (Linear Quadratic Regulator) controller.

Here's a detailed evaluation of this paper:

A- Strengths:

1- Professional Language and Structure: The language used is formal and precise, appropriate for an academic or professional audience. The structure is logical, with a clear progression from the introduction, through the methodology, to the conclusions.

1- Clear and Focused Objective: The research clearly outlines its goal of improving vehicle handling, ride comfort, and driving dynamics through the use of an LQR controller in a 4-DOF half-car active suspension system.

2- Comprehensive Background and Literature Review: The introduction provides a solid background on the types of suspension systems (PSS, SASS, ASS) and their respective benefits and limitations. It situates the research within the broader context of vehicle dynamics and control, highlighting the relevance and importance of the study.

3- Detailed Methodology: The use of MATLAB/Simulink for simulation is specified, indicating a rigorous and standardized approach to modeling and analysis. The description of using sinusoidal and random road inputs for testing demonstrates thoroughness in evaluating the system's performance.

4- Results and Conclusion: The paper presents clear findings, noting improvements in vehicle stability, safety, and ride comfort with the LQR controller. The quantitative results, such as peak-to-peak displacements and settling times, provide

concrete evidence of the benefits.

B- Areas for Improvement:

Technical Jargon and Accessibility: while the use of technical terms is necessary, some parts of the text might benefit from simplification or additional explanations for readers who are not specialists in the field of control systems or vehicle dynamics.