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(57) Abstract :
ABSTRACT The present invention discloses a novel method and a sophisticated apparatus designed for sig- nificantly enhancing vehicle suspension systems through the application of advanced kinematic principles and dynamic analyses. The apparatus incorporates a multi-link suspension mecha- nism seamlessly integrated with adaptive dampers and an intelligent control unit that employs real-time kinematic and dynamic computations. The method entails optimizing suspension ge- ometry through rigorous mathematical modeling of vehicle dynamics, dynamically adjusting damper characteristics in response to varying road conditions, and leveraging comprehensive sensor feedback for precise and accurate control. This innovative invention markedly improves ride comfort, enhances handling stability, and boosts energy efficiency by dynamically adapt- ing to diverse terrains and driving scenarios. The system is versatile and applicable to both passenger vehicles and commercial vehicles, offering a scalable and adaptable solution to meet the demands of modern automotive suspension requirements.

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