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Modeling of multi-objective robust design approach to passive vehicle suspension system

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In product development, the design is a multi-objective decision-making process. Various approaches, including weighted single objective optimization, multi-objective optimization, robust design with single decision metrics, have been formulated and applied to different design problems. The aim of this study is to minimize the acceleration of the vehicle body and relative displacement between the vehicle and suspension components with the integration of robustness and durability at the design stage. Evaluation of 1-DOF (simple) vehicle suspension system is the first step to evaluate the multi-degree of freedom suspension models. Then, the simple passive suspension model is investigated by using multi-objective robust design approach. In this research, multi-objective robust design approaches are modeled and applied to a passive vehicle suspension system and are compared to other existing approaches.

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