Development of the Dynamic Model for Infantry Fight Vehicle

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ABSTRACT

Wheeled infantry fighting vehicle does not have a large contact area with road surface and a lower center of gravity, compared with tracked armored vehicle. Therefore, the stability of wheeled infantry fighting vehicle is inferior against the tracked armored vehicle. Moreover, the recoil force of large-caliber cannon may also affect the stability of vehicle. In order to investigate the dynamic stability of wheeled fighting vehicle in the case of hill driving and cannon firing, the rigid model and hot-point model of single suspension system were created using the ADAMS software. The experimental data of suspension system test platform were used to verify the accuracy of the proposed suspension system model. According to the specification of vehicle body, turret, wheel distance, center of gravity and tire, this study constructs a full-scale vehicle model by using the 3D cartography software and ADAMS. Furthermore, whether wheeled fighting vehicle will induce slip and turnover on a hill driving and cannon firing test was discussed herein. These results and procedures can be applied as a reference for research unit to study the stability design of the wheeled infantry fighting vehicle. Also, the analysis of spring stiffness and damping coefficient of suspension system model provides a valuable basis for analyzing human body comfort and applying to the maintenance stage on the fixed component.

Keywords: Infantry Fight Vehicle; Suspension System; Dynamic Simulation

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