

The Vibration Effects of a Two In-Wheel Electric Vehicle Towards the Human Brain

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Abstract:

The human biodynamic and vehicle models are often modelled separately in order to understand the impact of vibration on the human itself and vehicle ride comfort, respectively. Nonetheless, several studies have recently combined both models into a single system to investigate the dynamic response and ride comfort during travelling. In this study, five degrees of freedom (5DOF) human biodynamic model is incorporated with a two in-wheel electric car model to correlate the impact of vibration on a tire towards the human brain. The model is analysed through MATLAB simulation with a car travelling at a speed of 10 km/h. It could be observed from the present investigation that the proposed model is able to highlight a significant impact of the brain to the skull when the car is on the move or in cornering mode.

Keywords: Vibration; Vehicle; Human Biodynamic Model; Comfort

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