

# **Excitation Behavior of Tire and Wheel Assembly Faults in Shape of Non-uniformity in a Vehicle**

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## **Abstract**

The aim of this research is to analyze the excitation of tire and wheel non-uniformity, which can be categorized as force, moment, and/or displacement. Ideally, tire should be uniform in geometry, mass distribution, and stiffness, thus, tire rotates with no force variation and vibration delivered to the vehicle, as vehicle moves. Nevertheless, this is only theoretically possible; in fact tire has some non-uniformities. In this paper an analytical method is proposed to identify and calculate excitations in each case of non-uniformity. Then importance of each case and also significant parameters are analyzed.

**Keywords: Non-uniformity, Imbalance, Tire and Wheel, Excitation, Vehicle.**

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