عنوان مقاله:

Dynamic Finite Element Analysis of Car Wheel Rim

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خلاصه مقاله:

The dynamic behaviour of road vehicles are the result of the dynamic interaction of the various components of the vehicle. A major role is played by the wheel consisting of rim and pneumatic tire. The purpose of the car wheel rim is to provide a firm base on which to fit the tire. Therefore, its shape and dimension should be suitable to adequately accommodate the particular tire required for the vehicle dynamic and vibro-acoustic behaviour. In order to facillitate the study of the steady-state erformance and transient and oscillatory behavior of the rolling tire, in this paper, the three dimensional CAD model of the wheel is designed and analyzed using Finite Element Method. In the present work a detailed dynamic analysis - natural frequencies and mode shapes – is performed on wheel rims of steel and alumium alloy material under different tire pressure loads and rotational speeds. The main purpose of this study is to compare the frequencies of wheel rim with the tire cavity frequencies and identify frequency dependent transient phenomena, in the tire and wheel, in the future.

کلمات کلیدی:

Wheel Rim, CAD, Finite Element Method (FEM), ANSYS, dynamic Analysis