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## Dynamic characterisation of vehicle structural panels (Article)

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## Abstract

The **dynamic** characterisation of **vehicle** structures is a crucial step in NVH analysis and helps in refining the vibration and noise in new vehicles, which is becoming a marketing edge as well. This paper investigates the **dynamic** properties of two parts of the **vehicle** structure which are door and hood **panels**. Theoretical modal analysis, which is referred to as finite element analysis (FEA) and experimental modal analysis (EMA) or modal testing, has been used as investigative tools. The paper investigates the **structural dynamic** properties of door and hood **panels** of a local car. ME'scpe software was used to analyse the data obtained from the Pulse to extract the **dynamic** properties of the **panels**. Ls-dyna software was used to analyse the **dynamic** behaviour of the structure. The comparison between the results obtained from both analyses showed some similarity in frequencies and mode shapes. Finally the paper concludes that experimental modal analysis and finite element analysis can both be used to extract **dynamic** properties of structures. © Copyright 2015 Inderscience Enterprises Ltd.

## Author keywords

Dynamic analysis; FEA; Finite element analysis; Modal analysis; **Structural** vibration

## Indexed keywords

**Engineering controlled terms:** Dynamic analysis; Modal analysis; **Structural** analysis; **Structural** dynamics; **Structural** properties; Vehicles; Vibration analysis; Vibrations (mechanical)

**Dynamic** behaviours; **Dynamic** property; Experimental modal analysis; Modal testings; **Structural dynamic** properties; **Structural** vibrations; Theoretical modal analysis; **Vehicle** structures

**Engineering main heading:** Finite element method

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## References (13)

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Donders, S., Takahashi, Y., Hadjit, R., Van Langenhove, T., Brughmans, M., Van Genechten, B., Desmet, W.

1 **A reduced beam and joint concept modeling approach to optimize global vehicle body dynamics**

(2009) *Finite Elements in Analysis and Design*, 45 (6-7), pp. 439-455. Cited 52 times.

doi: 10.1016/j.finel.2008.12.004

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Jiang, J.-S., Gu, S.-N., Wang, Y.-J., Yao, Q.-H.

2 **A modal parameter identification technique and its application to large complex structures with multiple steady sinusoidal excitation**

(1990) *Journal of Sound and Vibration*, 138 (2), pp. 221-231. Cited 3 times.

doi: 10.1016/0022-460X(90)90539-C

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(2013) 42nd International Congress and Exposition on Noise Control Engineering 2013, INTER-NOISE 2013: Noise Control for Quality of Life

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