

ACOUSTICS2008/2202

Is there a perceptive signature of vehicles vibrations ?

Maël Amari^a, Etienne Parizet^b and Vincent Roussarie^a

^aPSA Peugeot Citroën, Centre Technique de Vélizy, Route de Gisy, 78943 Vélizy-Villacoublay, France

^bLaboratoire Vibrations Acoustique, Insa Lyon, 25 bis, av. J. Capelle, 69621 Villeurbanne Cedex, France

The vibro-acoustic comfort of vehicles running at low speed has been studied for several years by car manufacturers. Even if car passengers are exposed to a complex environment involving sight, hearing and touch, it is generally agreed that vibrations transmitted through the seat is a very significant parameter in such situations. Previous laboratory experimentations revealed that vehicles were strongly discriminated even when subjects were submitted to seat vibrations only. The ranking of vehicles was also identical for different tested roads. All these observations raised the question of the existence of an identifiable signature of vehicles, independent of the road type. A perceptive experiment designed to evaluate the influence of such phenomenon was conducted. Subjects were submitted to a free sorting test. The categorisation task consisted in grouping vibrations stimuli recorded in 9 cars running on 3 different roads according to their similarity. The RMS level of stimuli was normalised so that its effect was not predominant during the experiment. Results showed that stimuli groups corresponded to the 3 tested roads, and were correlated to time envelopes of vibrations. Vehicles were not significantly discriminated.