

## **ACOUSTICS2008/2141 Towards an hearing threshold prediction model in car noise**

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Sound design is an important challenge at PSA Research Center. Engine noise is rich in harmonics and interacts with aerodynamic and road noise. In this context, comprehension of masking phenomenon is indispensable to obtain a good description of sound attributes like roughness and booming. In this paper, we present a study about interaction between engine harmonics and road and aerodynamic noise. Thresholds for the detection of one harmonic in noise are firstly measured as a function of noise level. We propose also a prediction model for thresholds as a linear function of noise level in critical band. Results were compared to data available in the literature. Secondly, masking of harmonics by a harmonic and noise is measured. The masker frequency is 100 Hz and its level varies from 65 to 85 dB SPL in 5 dB steps. Noise level is 80dB SPL. Masking patterns are traced for 8 frequencies (50 to 225 Hz).