

ACOUSTICS2008/2395
New Roadway noise modeling to predict noise propagation in front of urban façade

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Roadway noise is the most important example of a linear noise source, since it comprises about 80 percent of the environmental noise exposure for humans worldwide. Due to the complexity of the variables, a line source acoustic model is realized by a computer model. In this paper we propose a new approach system based upon Schröder's quadratic residue diffuser modeling for modeling a linear traffic source. 1/10th scale model has been used to simulate the traffic noise propagation in front of the building façade and for a free field. The line source directivity is made quasi-uniform in the aperture angle of interest. The line source directivity measurements were made using a 1/4" microphone Larson Davis type 2530. The sequence of the quadratic residue diffusor is calculated following the Schröder's modulo formula and with 1.60m length, 0.14m height, and 0.11m width. The line source has also been weighted by a full-size equivalent normalised traffic noise spectrum according to the French standard NF EN 1793-3.