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Auralisation and Psychoacoustic Evaluation of Traffic Noise Scenarios

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The evaluation of vehicle noise is mostly done using the A-weighted sound pressure level, e.g. the L_{max} for pass-by noise or the L_{eq} for community noise. Unfortunately, the dB(A)-value does not reflect the annoyance effect of vehicle noise correctly. During the first phase of the European Research Project QCity a metric for psychoacoustic evaluation of single pass-by events has been developed. In the next step this metric is adapted for the evaluation of complex traffic scenarios calculated by traffic flow simulations. Psychoacoustic evaluation requires time signals. Single values or third octave spectra are not sufficient to investigate all relevant effects (e.g. annoying time patterns, masking). The time signals are calculated combining advanced resynthesis with exterior noise simulation techniques. Hereby, it is possible to investigate the effect of e.g. low noise surfaces or various traffic control measures (traffic light vs. roundabout). Since a standard traffic scenario includes a very large number of single pass-by events special focus lies on fast processing techniques. This paper gives an overview of the developed algorithms and presents first results of the psychoacoustic evaluation of traffic scenarios.