Numerical design and experimental investigation of noise barriers with resonators

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Abstract
Following the demand for improving the efficiency of noise barriers without increasing their height, a new procedure has been developed, which allows for extending a typical noise barrier by a line of resonators in a quite efficient way. It is based on numerical investigations including the indirect boundary element method.
Several representative calculations are shown which demonstrate how the new approach can be used. The procedure turns out to be computationally very powerful and it seems to be a very promising step towards a more efficient design of sound barriers featuring high effectiveness at moderate overall heights. Measurements at a 20 m wide and 4 m high noise barrier with and without the device will be presented.

Keywords: noise barrier top, resonators, BEM, array measurement