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ABSTRACT

The increasing use of railways for transporting people and goods is essential to achieve more environmentally and economically sustainable mobility. However, issues related to noise pollution caused by train traffic need to be mitigated to maintain a healthy coexistence between inhabitants and trains. This paper presents the characterization of a low-height acoustic barrier to be used in a railway environment, numerically developed in a first phase using 2D BEM and which bases its working principle on the curved geometry, capable of sending a large amount of energy back to the track. The solution is placed close to the noise source and takes advantage of the ballast to increase the efficiency of the developed solution. The numerical results show Insertion loss levels in the order of 10 dB for a set of receivers close to the track. The experimental campaign with the prototypes developed on a section of the Sintra line, in Portugal, corroborates the results obtained numerically. For the various records obtained from the passage of numerous trains, Insertion loss values higher than 10 dB were obtained for the frequency range between 400Hz and 4000 Hz.