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NOISE CONTROL FOR A BETTER ENVIRONMENT

## **Indirect wheel roughness assessment by means of rail vibration analysis**

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### **ABSTRACT**

Smooth rail-wheel contact is key in achieving a minimal amount of rolling noise emission in railways. Both rail and wheel roughness play a role in rolling noise emissions and both roughness levels can be nowadays measured with the help of precise specialised instrumentation. However, while rail roughness measurements can be carried out in a quite straightforward way, frequent assessment of wheel roughness state of a complete railway fleet is in practice unaffordable for many railway operators. This is due to the large amount of wheels that need to be assessed, and to the setup which is necessary for conventional wheel roughness assessment. Since wheel roughness is one of the key causes of rail vibration, the possibility of approximately assessing individual wheel roughness by an analysis of rail vibration characteristics at pass-by can be considered. This opens the door to a cheap and practical alternative for keeping an updated and individualized record of the approximate surface state of all wheels in a railway fleet.