MADRID
inter.noise 2019
June 16 - 19
NOISE CONTROL FOR A BETTER ENVIRONMENT

# Case study: application of dynamic vibration absorbers on the upper track of a double-deck tunnel to reduce railway induced vibrations

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## ABSTRACT

**Metro Barcelona line L9 is a 48-km length subway railway infrastructure built using a 12m inner diameter TBM creating a double-deck tunnel where tracks are not parallel but overlap. It has been experimentally demonstrated that vibrations induced due to operation of the upper track are higher than those generated by operation of the lower track.**

**To control railway induced vibration generated during the upper track operation, dynamic vibration absorbers (DVA) were design as an innovative vibration abatement solution for railway applications.**

**This paper describes the DVA setup used in a specific Metro Barcelona line L9 section to control vibrations, the DVA construction, their installation in the analysed section and the experimental results in terms of vibration reduction obtained after the implementation of the DVA in the upper track of the analysed Metro Barcelona line L9 section.**

**Keywords:** Dynamic vibration absorber, vibration mitigation, railway, tunnel, vibration control, innovation.
**I-INCE Classification of Subject Number:** 46