Modal Identification of Railway Bridges from Ambient and Free Vibration Records

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ABSTRACT: This paper presents the modal identification studies performed in railway bridges with two different types of testing and data analysis methodologies. In the first one, ambient vibration tests data was considered to apply the enhanced frequency domain decomposition method (EFDD). In the second methodology the free vibrations, measured immediately after a train crosses a bridge, were considered to apply the covariance driven stochastic subspace method (SSI-COV). In the paper, the results obtained with the two modal identification procedures, in three bridges located in the South line of the Portuguese Railways Network, are compared with each other and with the results computed with finite element models.