

# Dynamic identification of damage in brick masonry walls

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## ABSTRACT

This paper shows the experimental and numerical analysis developed on a brick masonry wall of 3x2.5x0.2 m to understand the changes on its dynamic behaviour with different stiffness situations: (i) original, (ii) loaded with different load levels, (iii) damaged by horizontal in plane loads, (iv) retrofitted with Textile Reinforced Mortars (TRM) and (v) retrofitted and damaged by horizontal in plane loads. This analysis has been developed at the Civil Engineering Lab at the University of Alicante. On this masonry wall a matrix of 8 seismic accelerometers have been installed to evaluate, in plane and out of plane, changes in the main frequencies, modal damping ratios and modal shapes. By the use of Operational Modal Analysis techniques the results shows that the changes on the stiffness have important influence on the main frequencies and in the modal damping ratios. Very low influence have been detected on the modal shapes due to the low level of external vibrations generated during the tests. Due to the low level of vibrations inside the lab, the classical application of ambient vibrations for OMA has been not possible and an external white noise force has been introduced on the top the wall by the use of a shaker to generate a general level of vibrations on the specimen.

## REFERENCES

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