

Analysis of archaeological masonry structures in Herculaneum

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The paper focuses on the analysis of ancient masonry structures in the archaeological Roman site of Herculaneum, Italy. In particular, the façade of the *Casa del Tramezzo di Legno* (Insula III, 11) has been chosen as the case study: its ground elevation is about 8 meters and it is characterized by various and irregular masonry patterns (*Opus Incertum*, *Reticulatum* and *Quadratum*). The structural analysis of this archaeological macroelement claims for advanced experimental and computational tools and techniques [3]-[4], due to its specific features and its incalculable historical and cultural value. This is pursued in this paper by integrating the experimental results from various nondestructive diagnostic techniques [1]-[2], such as: georadar, sonic tests, impact-echo and, infrared thermography tests, coupled with advanced numerical modeling based on the finite element method. Here special attention is devoted to the comparison between sonic experimental test data and numerical simulations data.

The results clearly highlight the remarkable advantages of this integrated approach in order to assess the structural health in the field of cultural heritage and, in particular, for archaeological constructions.

References

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