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## SEISMIC AND VOLCANIC VULNERABILITY ASSESSMENT OF A MONUMENTAL BUILDING IN THE VESUVIUS AREA



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### **Abstract:**

The results of seismic and volcanic vulnerability assessment of a monumental masonry building in the Vesuvius area are presented in this paper. The objective of this assessment is to suggest maintenance and retrofitting measures for increased structural safety of the building. Initially, the seismic behaviour of the structure was investigated using modal dynamic and pushover analyses. These analyses were carried out with the help of two different computer programmes entitled AEDES and SAP2000. Static nonlinear and linear analyses were employed, respectively, for earthquake and tephra loading conditions from a volcanic eruption. Finally, retrofitting interventions based on the use of metal elements and rock wool insulator have been designed and applied to the structure in order to eliminate the seismic and volcanic deficiencies in the investigated building. The effectiveness of such interventions has been assessed using numerical analyses on the retrofitted building; these analyses indicated improved global structural behaviour of the building.

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