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### **The NDT investigations carry out at the Arudj Cathedral, Armenia**

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#### **ABSTRACT**

Arudj Cathedral, Armenia, is an example of early-Christian domed-hall that dates 671-672. A deep structural analysis of the building was developed by Politecnico di Milano, during the II° Level Master for Architects and Archaeologists named “Restoration Training and Support to Local Institutions for the Preservation and Conservation of Armenian Heritage”. The preservation project mainly focuses on deepen the knowledge level of the building in relation to the architectural and structural aspects in order to offer a working method with the aim to propose and teach alternative solutions for static and seismic consolidation. This paper reports the NDT investigations of the surveys carried out at the Cathedral of Arudj and the results obtained at the laboratory of the Politecnico di Milano. The NDT investigations were carried out by the Authors and here following are briefly described.

Sonic investigations on masonry structures were applied for a qualitative comparison of the walls, based on the variation of the sonic velocity values in the presence of areas with lower density, voids or cavities.

The passive thermographic technique was applied to identify the distribution of capillary ascent in masonry structures. In order to offer a long-term verification of the evolution of the crack pattern, after having identify the cracks present on the masonry structures some displacement transducers have been fixed to state their evolution hourly.

Finally a series of laboratory tests were carried out to determine the main mechanical characteristics of the constituent stone.