On-site X-ray computed tomography for cultural heritage: the “Lilibeo Projec”.


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X-ray Computed Tomography (CT) is a powerful non-destructive technique, capable of imaging the 3D inner morphology of the analysed objects. CT is currently playing an increasingly important role in the field of Cultural Heritage studies, as it can answer many questions about manufacture, function and conservation status of heritage objects. Most of the CT studies on archaeological findings and works of art reported in the literature have been carried out by means of medical scanners. However, the geometrical set-up and X-ray energy of these machines are optimized for the human body, so, when they are applied to Cultural Heritage assets, there are strong constraints with regard to maximum size, shape, and density of the object to analyse. In order to overcome these limitations and to solve the problems related to the transfer of artworks in the laboratory, our research group has developed customized CT systems, which can be transferred easily inside museums or restoration laboratories to perform the tomographic analysis on-site. Thanks to this expertise, our group participates in the Lilibeo Project, which arises from the collaboration among the Enrico Fermi Historical Museum of Physics and Study and Research Centre, the Trapani and Marsala Regional Pole for Cultural Sites, the Lilibeo Regional Archaeological Museum of Marsala, the Scuola Normale Superiore of Pisa, the University of Bologna, the Bologna Division of the National Institute for Nuclear Physics, the University of Rome “Tor Vergata” and the University of Geneva. The Project proposes to combine the traditional archaeological investigations with chemical-physical analysis techniques and the development of 3D graphic simulations for the dissemination of results. The Project is characterized by two main research topics: underwater and naval archeology and urban and funerary archeology. We are involved in the second one and, in particular, our contribution will concern the CT analysis of artifacts kept at the Lilibeo Archaeological Museum and finds from excavations currently underway in the neighboring Archaeological Park. In my contribution, the results of the first on-site measurement campaign will be presented and discussed.