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Seminar

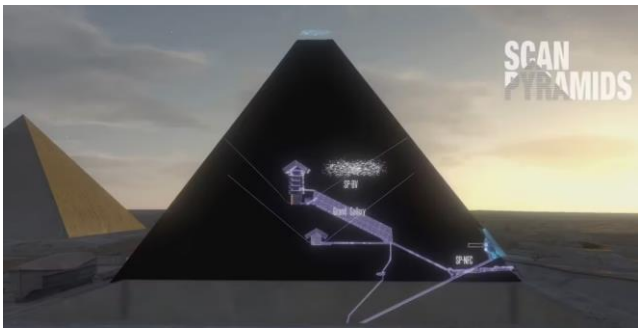
Discovery of the North Face Corridor in the Great Pyramid of Giza using Non-destructive Techniques
Prof. Mohamed Elkarmoty – Faculty of Engineering, Cairo University
(Representing ScanPyramids Project)
Sala Ulisse – Accademia delle Scienze – Giovedì 11 Maggio 2023, h11-13

Summary

The ScanPyramids project (www.scanpyramids.org) began in 2015, it is coordinated by the Faculty of Engineering-Cairo University in Egypt and the HIP Institute in France, with the partnership of institutions from Japan, France, Germany, and Canada, and in cooperation with and under the supervision of the Supreme Council of Antiquities in Egypt. ScanPyramids project aims at investigating the internal structures of the Giza Pyramids using non-destructive techniques, in order to understand better how the pyramids were built. The project revealed two discoveries in the Great Pyramid of Giza: The ScanPyramids Big Void (SP-BV) and the ScanPyramids North Face Corridor (SP-NFC).

The SP-BV was detected by three different techniques of muography. It is a large void, about 30 m long, detected above the Grand Gallery. The results of these discoveries were published in 2017, in Nature. The SP-NFC was detected first by thermography in 2015 and by muography in 2016, followed by more measurements of muography, Ground Penetrating Radar (GPR), Ultrasonic Testing (UST), and supported by image fusion of data, leading to characterization of the location and the shape of SP-NFC, in 2022, with very few centimetres accuracy. Then, in 2023, a small opening was detected by the GPR survey, behind the blocks of the Chevron, allowing to use of a 6 mm endoscope to see the corridor for the first time after 4500 years. The corridor was found directly behind the Chevron at the Northern Entrance. The results were published in Nature Communications and NTD&E International in 2023.

The seminar will present a short brief of the history of pyramids, ScanPyramids project, ScanPyramids Big Void Discovery, ScanPyramids North Face Corridor Discovery, the non-destructive techniques used in the discoveries, site measurements, and challenges, followed by open discussion with the attendees.



Mohmed Elkarmoty BIO

Mohmed Elkarmoty is an Assistant Professor of Geological Engineering and Mining and Director of the Rock Engineering Laboratory at the Faculty of Engineering – Cairo University (2018-present). Since 2018, he has been the Deputy Coordinator of ScanPyramids project. Mohamed has got his B.Sc. (2009) and M.Sc. (2013) in Mining Engineering, from Cairo University. He has got his Ph.D. (2014-2018) in Mining Engineering, DICAM, University of Bologna. Mohamed has 14 years of experience in co-teaching and teaching several mining and geo-engineering modules. His research interests are open pit mine planning and design, quarrying optimization, rock testing and characterization, non-destructive testing, applications of science and technology in cultural heritage, and geothermal energy. Mohamed has published more than 25 research articles in international journals and conferences. He participated in more than 30 engineering projects for mining, construction and archaeological restoration. He has won several research projects, grants and awards. Recently, he has been awarded Cairo University Encouraging Award in Engineering Sciences (2022) and an under-signature project (as Co-Chairholder) approved by UNESCO for the establishment of a UNESCO Chair on Science and Technology for Culture Heritage at Cairo University.

Seminar Info:

The Seminar is financed by DICAM for DICAM PhD Students. The scientific community of UNIBO is invited to participate.

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