

Non-conventional use of Ground Penetrating Radar:
the example of the Italian research at Tutankhamon's tomb (KV62)

Gianluca Catanzariti^a,
Luigi Sambuelli^b, Cesare Comina^c, Francesco Porcelli^d, Filippo Barsuglia^e, Gianfranco Morelli^e.

^a 3DGeoimaging, Torino, Italy

^b Department of Environment, Land and Infrastructures, Polytechnic University of Turin, Torino, Italy

^c Department of Earth Sciences, University of Turin, Torino, Italy

^d Department of Applied Science and Technology, Polytechnic University of Turin, Torino, Italy

^e Geostudi Astier s.r.l., Livorno, Italy.

Our team conducted a high-resolution multi-frequency GPR survey in March 2017 at Tutankhamon's tomb (KV62), in order to investigate the presence of hidden chambers that could host the burial of Nefertiti, as suggested by the theory of the Egyptologist Nicholas Reeves (ref. 1).

Our research followed two previous surveys carried out in 2015 and 2016 providing contradictory results about the existence of undiscovered empty spaces behind the north and west walls of the KV62 burial chamber.

In order to solve this uncertainty, different antennas were used, ranging between 200 MHz and 2 GHz. In addition, a very dense spatial sampling was adopted to acquire three GPR datasets summing about 2700 m of GPR profiles. Data post-processing was based on advanced vector imaging techniques, providing a full three-dimensional reconstruction of the response recorded from the burial chamber walls. No reflection induced by empty spaces or man-made discontinuities was detected behind the north and west wall, indicating that no hidden chamber is located immediately adjacent to the Tutankhamon's tomb (ref.1).

The talk will describe the context of the research and the results obtained by our work, with a specific focus on non-conventional data acquisition strategies and post-processing techniques.

[1] Nicholas Reeves, 2015. *The burial of Nefertiti ? Amarna Royal Tomb project*. Valley of the Kings, Occasional Paper No. 1

[2] L. Sambuelli, C. Comina, G. Catanzariti, F. Barsuglia, G. Morelli, F. Porcelli, 2019. *The third KV62 radar scan: Searching for hidden chambers adjacent to Tutankhamun's tomb*. Journal of Cultural Heritage, Volume 39, Pages 288-296.