

## Application of resistivity survey in the Mediterranean area

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### Abstract

In this paper we would like to show our activity in geoelectrical prospection applied to archaeological research in Italy and Cyprus. Three components of our work group were involved in resistivity survey (developing instruments, retrieving and analysing data), two others in topography and GPS.

Our aim was to develop a data acquisition and processing system encompassing all steps of resistivity survey. Data were acquired using instrument prototypes. Furthermore, we utilized a data recording procedure integrating differential GPS technique. Therefore, the geometrical points, representing each profile at the survey, were correctly georeferenced. Some data analysis was performed using probability tomography is also shown. This procedure is independent from the particular geometrical measuring system and terrain condition.

**Key words:** *resistivity method, tomography, GPS georeferencing*

### Instruments

The first survey system consisted of an AC generator with multiple outputs for different current probes arrays, a laptop computer for acquisition and elaboration; pass-band filter and amplifier, a 16 bit AD converter and our acquisition and elaboration software (Figure 1). In collaboration with the Institute of the History of Material Culture of the Polish Academy of Sciences, we developed two instrument prototypes (Figure 2). The most recent prototype, ADD-01, was constructed by Leon Mucha.

The Differential GPS instrument in use is a 24 channel dual-frequency receiver Leica SR530 (centimetre accuracy), with RTK (Real Time Kinematics) on-board.



Figure 1. The AC generator is equipped with four current outputs: A1-B1, A2-B2.

This configuration is used to detect two measurements with two perpendicular current flows at each measurement point (i.e. rectangular array).

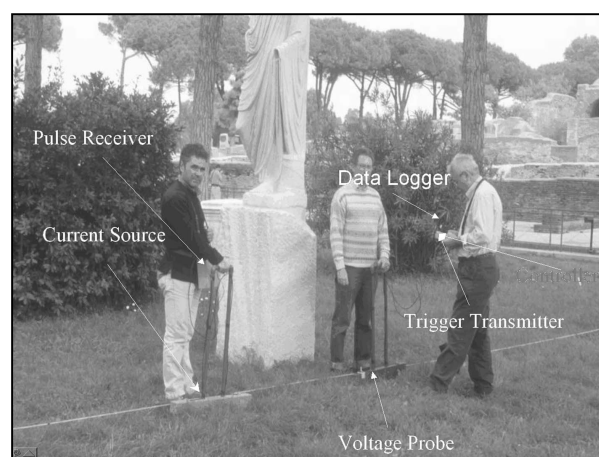


Figure 2. The most recent prototype.

### Case History

#### *Etruscan Necropolis (Chiusi, Italy)*

The first area investigated is located at Poggio San Paolo hill. The survey objective was finalised to discover a buried (probably religious) structure. During the excavation of June 2001, it was possible to verify the correspondence between a previously detected geoelectrical anomaly and an excavated layer containing bricks and tiles belonging to a collapsed structure (Figure 3).