

# Geophysical investigation at the archaeological site of Venosa (PZ)

Lara De Giorgi<sup>2</sup>, Ivan Ferrari<sup>2</sup>, Francesco Giuri<sup>2</sup>, Maurizio Lazzari<sup>1</sup>, Giovanni Leucci<sup>1\*</sup>

<sup>1</sup> *National Research Council – Institute of Heritage Science, Lecce, e-mail: lara.degiorgi@cnr.it, ivan.ferrari@cnr.it, francesco.giuri@cnr.it, maurizio.lazzari@cnr.it, giovanni.leucci@cnr.it*

*\*Corresponding author, e-mail: giovanni.leucci@cnr.it*

**Abstract** – The Roman amphitheater of Venosa (Potenza, Italy) is one of the experimental sites identified as part of the IDEHA project in the Basilicata region. The monument represents one of the most representative buildings of the ancient city of Venusia, famous for being the birthplace of the poet Orazio. In this study the results of a part of the project are proposed, those relating to the geophysical investigation campaign undertaken to investigate the presence of structures of archaeological interest in the amphitheater area.

## I. INTRODUCTION

The Roman amphitheater of Venosa (Potenza, Italy) is one of the experimental sites identified as part of the IDEHA project in the Basilicata region, of which the Institute of Cultural Heritage Sciences (CNR ISPC) was scientific coordinator. The monument originally represents one of the most representative buildings of the ancient city of Venusia, famous for being the birthplace of the poet Orazio: founded by the Romans in 291 BC, it immediately played an important strategic role for the control of the *Via Appia*. The structure, dating to the first century AD, is located in the easternmost sector of the city, in a peripheral area originally affected by residential settlements (Fig. 1). Unfortunately, very little remains of its munificence today, as the site after centuries of abandonment became an open-air quarry for the recovery of building materials: a fate common to many other ancient monuments of Venosa. Currently the ruins fall within a large archaeological park administered by the Superintendency of Archaeology, Fine Arts and Landscape of Basilicata through the National Archaeological Museum of Venosa, in which both the remains of a vast Roman residential district can be visited, with various domus and a thermal complex, and the medieval complex of the Holy Trinity which includes the famous “Incompiuta”, a suggestive 12<sup>th</sup> century basilica, started by the Normans and never finished.

In this study the results of a part of the project are proposed, those more specifically linked to the geophysical investigations.

Geophysical surveys was performed using the magnetometer method, in gradiometric configuration, for the identification of structures of archaeological interest in the area surrounding the amphitheater.

## II. GEOPHYSICAL DATA PROCESSING AND INTERPRETATION

The magnetic measurements were taken using the bartington grad 601 magnetometer in gradiometric configuration, with four magnetic probes set in a vertical direction at a mutual distance of about 1 m (Fig. 2).

Such a configuration allowed the automatic removal of the diurnal variations of the natural magnetic field. Before defining the acquisition modalities, it was necessary to set up the proper orientation of the two magnetic sensors. Such an orientation depends on the survey direction and site location in the world.

All the magnetic acquired data were processed using the TerraSurveyor 64 software (DW Consulting) that provides a wide range of processes, allowing the data to be manipulated to produce the best magnetic anomalies distribution [1,2]. The surveyed areas are shows in fig. 3.

Magnetic results provided an identification of several magnetic anomalies related to the presence of a significant buried archaeological structures (Fig. 4). In detail, the gradiometric map shows several iso-oriented anomalies potentially related to the presence of buried structures: they probably prove the presence of walls (B) and roads (S). The anomalies labelled “A” are clearly related to the amphitheater.

## III. CONCLUSIONS

The geophysical investigations have provided good results regarding the identification of structures present in the very first subsoil. Magnetometric method made it possible to extend the investigation to a depth of approximately 2-3 m, highlighting anomalies probably attributable to structures of archaeological interest.

The results highlighted the presence of a probable road and walls, the latter attributable to wall structures probably linked to the structure of the amphitheater. Is clearly evident the anomalies “A” related to the amphitheater.

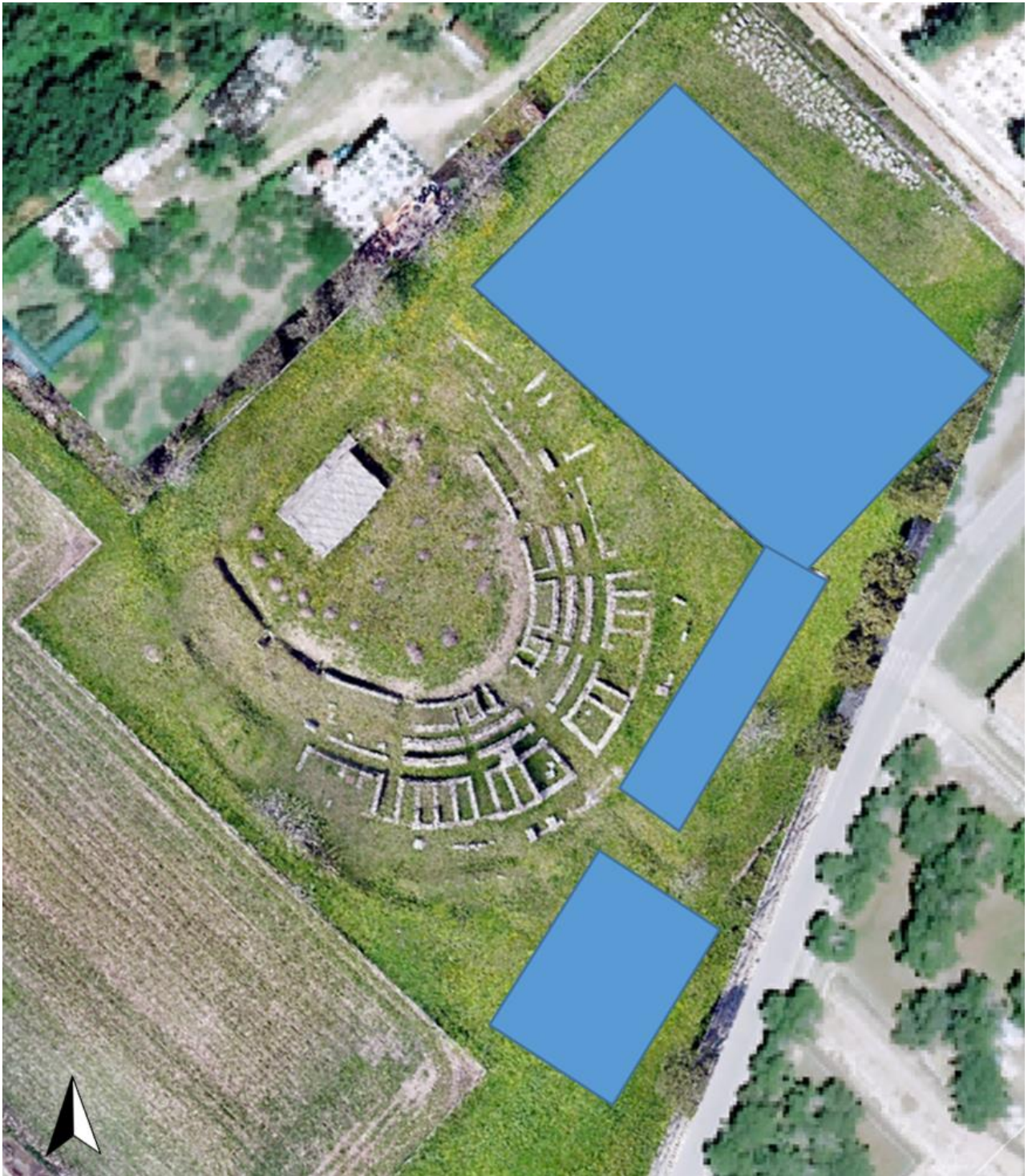


Fig. 1. Venosa: the archaeological site **A - B**



Fig. 2. Photo relating to the measurement phases with a magnetometer.





*Fig. 3. Venosa: surveyed areas.*





*Fig. 4. Gradiometric map: A: amphitheater; B: walls; S: roads.*

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#### REFERENCES

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- [2] G.Leucci, "Advances in Geophysical Methods Applied to Forensic Investigations: New Developments in Acquisition and Data Analysis Methodologies", Springer editore,