



Estimation of probability maps through vertical gradient magnetic and 2D-GPR data to evaluate the existence of buried structures: geophysical prospection in Roman Villa of Pisões (South Alentejo, Portugal)

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Pisões is a monumental Roman villa located near Beja (South Alentejo, Portugal) and it constitutes an Experimental Field of Archaeological Sciences from the University of Évora. Currently, only the urban part is excavated and the entire rustic part still to be discovered, so that is being targeted for geophysical prospection to obtain its planimetry.

The Pisões site is a place characterized by a low detectability for the application of the several geophysical methods. The high content of clay in soil composition prevents the success of the ground penetrating radar (GPR) survey, and the excessive presence of ceramic fragments at surface prevents the success of the vertical gradient magnetic (VGM) survey.

These difficult conditions of low detectability are a challenge that we intend to overcome. For this purpose, we suggest using the probability maps estimated from 2D-GPR and magnetic anomalies data, to improve the planimetry of the buried structures.

The probability maps are generated considering the 2D results from magnetic and GPR surveys, also combining information regarding reflection amplitudes (dielectric constants) and magnetic anomalies (magnetic susceptibility).

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