

Abstract Title: Magnetic and radar prospections at the Roman fortified military camp of Paleokastër, Southern Albania

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We report on a combined magnetic–GPR survey performed in July 2018 at a Roman castrum located 10 km north of Gjirokaster (Albania), close to the village of Paleokastër. Integrated magnetic and GPR surveys were carried out to determine the arrangement of buried structures and reconstruct the archaeological history of the settlement. Magnetic data were collected in gradiometer configuration using a Geometrics G–858 caesium vapor magnetometer. Vertical gradient and total field anomalies were used jointly in the forward modelling of the distribution of magnetization. The radar survey was carried out through the same area using a GSSI SIR-4000 system equipped with a 400 MHz central-frequency antenna. Filtered radar profiles were processed to create horizontal amplitude maps and 3D isosurfaces. An initial basic chart of buried structures was generated starting from such horizontal slices of amplitude reflections data. This map was locally integrated by the modelled magnetization distribution where GPR data were either missing or unable to delineate a buried structure. In these cases, vertical GPR profiles were correlated with magnetic gradient and magnetic anomaly profiles to constrain the physical nature and geometry of the buried structures. The analysis of the integrated data set allowed to trace the complete structure of the Roman fortification but also revealed the presence of deeper and older features of probable Hellenistic age and younger buildings of Byzantine age. This interpretation is supported by archaeological considerations. The Roman settlement was built in the early fourth century and destroyed during the Gothic incursion of 378 AD. Later, the area hosted a Byzantine civilian settlement during the fifth and sixth centuries. During this period, a Christian church was founded inside the fortress walls. The Hellenistic age of older structures is suggested by the materials used in the construction of the walls, which include several large opera quadrata blocks.