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A GPR investigation in the ancient Roman city of Aquinum, central Italy

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Nowadays there is increasing attention for preventive geophysical investigations when engineer works are planned, in order not to damage our cultural heritage. This interest is often joined to classical archaeological investigations or to NDT of monuments [1-2].
In this framework, GPR measurements [3] were performed in the Roman town of Aquinum, flourishing municipium at the time of Cicero and colony of the first century B.C. [4-6]. The urban area has been investigated during last 8 years by University of Salento through aerial photo-interpretation and several archaeological excavation campaigns. Considering the large extension of the area occupied by the Roman city (more than 10 hectares), and the limited economic resources, it was necessary to integrate the excavation evidences with indirect data obtained with a GPR survey. In particular, surveys were carried out on two strategic sectors, the first one (a rectangle of 18x30 m2) close to the thermal bath complex, the second one (a rectangle of 30x10 m2) 150 m far away and close to the remains of a large apsidal structure.
Investigations were performed with a RIS-HI mode system manufactured by IDSgeoradar. A standard processing was applied and the propagation velocity of the waves were evaluated by means of the diffraction hyperbolas [7] present in the data. From a technical point of view, it is worth outlining the markedly different quality of the achieved results in the two areas, even if they were not so far from each other. Indeed, it had rained two days before the measurements, and the second area has been prospected one day after the first one. Moreover, in the first area materials reported from previous archaeological excavation had been reported too.
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