



## **New discoveries with geophysics at Hadrian's Villa near Tivoli, Rome (Italy)**

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The Accademia Pilot Project of the University of Trento (Italy) concerns one of the lesser known buildings of Hadrian's Villa near Tivoli (Rome, Italy) the roman imperial estate built in the II century A.D. (see website [www.villa-adriana.net](http://www.villa-adriana.net)).

In the past years we surveyed the site with Total station and Laser scanner to draw a new plan. We also collected ancient plans: the ones by Francesco Contini (1668) and Giovan Battista Piranesi (1781) showed a series of subterranean service tunnels under the main building. Few parts of them are still visible, the rest is buried and filled with dirt.

Since it is not possible to make excavations, we decided to use geophysics to understand something more and to check the reliability of the ancient plans. The area is full of iron scraps, so we had to put aside magnetometer and chose geo-resistivimeter. Starting from the accessible part of one of the tunnels, we were able to adjust the instrument and to follow the bearing of the subterranean gallery even in the parts completely filled with debris.

Our survey produced very interesting results: we were able to detect the buried parts of the tunnel and we saw that it was matching with what was marked in the ancient map of Piranesi (1781).

This opens a new path to the exploration of the subterranean tunnels in the Accademia and in the rest of Hadrian's Villa, using non destructive instruments that were never applied before. Our geophysical survey will then extend to the rest of the Accademia, and we plan to complete it using geo-radar and Remote sensing techniques such as aerial infra-red photographs and Lidar.