COST Action TU1208 "Civil Engineering Applications of Ground Penetrating Radar": ongoing research activities and third-year results

Geophysical Research Abstracts
Vol. 18, EGU2016-18517, 2016
EGU General Assembly 2016

COST Action TU1208 “Civil Engineering Applications of Ground Penetrating Radar”: ongoing research activities and third-year results

Lara Pajewski (1), Andrea Benedetto (1), Andreas Loizos (2), and Fabio Tosti (3)

(1) Roma Tre University, Department of Engineering, Rome, Italy (lara.pajewski@uniroma3.it, andrea.benedetto@uniroma3.it), (2) National Technical University of Athens, Athens, Greece (aloizos@central.ntua.gr), (3) University of West London, School of Computing and Engineering, London, United Kingdom (tosti.fabio@gmail.com)

This work aims at disseminating the ongoing research activities and third-year results of the COST (European COoperation in Science and Technology) Action TU1208 “Civil Engineering Applications of Ground Penetrating Radar.” About 350 experts are participating to the Action, from 28 COST Countries (Austria, Belgium, Croatia, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Ireland, Italy, Latvia, Malta, Macedonia, The Netherlands, Norway, Poland, Portugal, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey, United Kingdom), and from Albania, Armenia, Australia, Colombia, Egypt, Hong Kong, Jordan, Israel, Philippines, Russia, Rwanda, Ukraine, and United States of America. In September 2014, TU1208 has been recognised among the running Actions as “COST Success Story” (“The Cities of Tomorrow: The Challenges of Horizon 2020,” September 17-19, 2014, Torino, IT - A COST strategic workshop on the development and needs of the European cities).

The principal goal of the COST Action TU1208 is to exchange and increase scientific-technical knowledge and experience of GPR techniques in civil engineering, whilst simultaneously promoting throughout Europe the effective use of this safe and non-destructive technique in the monitoring of infrastructures and structures.

Moreover, the Action is oriented to the following specific objectives and expected deliverables: (i) coordinating European scientists to highlight problems, merits and limits of current GPR systems; (ii) developing innovative protocols and guidelines, which will be published in a handbook and constitute a basis for European standards, for an effective GPR application in civil- engineering tasks; safety, economic and financial criteria will be integrated within the protocols; (iii) integrating competences for the improvement and merging of electromagnetic scattering techniques and of data- processing techniques; this will lead to a novel freeware tool for the localization of buried objects, shape-reconstruction and estimation of geophysical parameters useful for civil engineering needs; (iv) networking for the design, realization and optimization of innovative GPR equipment; (v) comparing GPR with different NDT techniques, such as ultrasonic, radiographic, liquid-penetrant, magnetic-particle, acoustic-emission and eddy-current testing; (vi) comparing GPR technology and methodology used in civil engineering with those used in other fields; (vii) promotion of a more widespread, advanced and efficient use of GPR in civil engineering; and (viii) organization of a high-level modular training program for GPR European users.

Four Working Groups (WGs) carry out the research activities. WG 1 focuses on the design of innovative GPR equipment, on the building of prototypes and on the testing and optimisation of new systems. WG 2 focuses on the GPR surveying of pavement, bridges, tunnels and buildings, as well as on the sensing of underground utilities and voids. WG 3 deals with the development of electromagnetic forward and inverse scattering methods, for the characterization of GPR scenarios, as well as with data-processing algorithms for the elaboration of the data collected during GPR surveys. WG 4 works on the use of GPR in fields different from the civil engineering, as well as on the integration of GPR with other non-destructive testing techniques. Each WG includes several Projects.

COST Action TU1208 is active through a range of networking tools: meetings, workshops, conferences, training schools, short-term scientific missions, dissemination activities. For more information on COST Action TU1208, please visit www.GPRadar.eu and www.cost.eu.

Acknowledgement

The Authors wish to thank COST, for funding the COST Action TU1208 “Civil engineering applications of Ground Penetrating Radar."