



Action TU1208 Civil Engineering Applications of Ground Penetrating Radar

Final Conference

Warsaw, Poland
25-27 September 2017

National Institute
of Telecommunications
of Poland

Overview on the TU1208 Short-Term Scientific Missions

Marian Marciniak (Poland)

M.Marciniak@itl.waw.pl, marian.marciniak@ieee.org



COST is supported by the
EU Framework Programme Horizon2020

Talk Layout

- Introduction - STSM rules
- STSMs in Action TU1208 – an overview
- Examples of successful STSMs
- Conclusions
- Biography and contact details of Author





Short Term Scientific Missions (STSM)

Those are institutional visits

aimed at supporting individual mobility,

fostering collaboration between individuals.



COST is supported by the
EU Framework Programme Horizon2020

STSM – Eligibility Rules

- An STSM applicant must be engaged in an official research programme as a PhD Student or postdoctoral fellow
- or can be employed by, or affiliated to, an institution, organisation or legal entity which has within its remit a clear association with performing research.
- The institution / organisation or legal entity where applicant pursues his/her main strand of research are is considered as Home institution.
- The Host institution is the institution / organisation that will host the successful applicant.



STSM – Eligibility

Applicant in a Home Institution	To perform an STSM in a Host Institution
Located in a Participating COST Full Member / COST Cooperating Member	In another Participating COST Full Member / COST Cooperating Member
	In a Participating COST Partner Member
	In an Approved IPC Institution
	In an Approved NNC Institution
	In EU Commission, Bodies, Offices and Agencies
	In an Approved European RTD Organisation
	In an Approved International Organisation
Located in an Approved NNC institution	In a Participating COST Full Member / COST Cooperating Member
Located in an Approved European RTD Organisation	In a Participating COST Full Member / COST Cooperating Member



STSM – online application

- Eligible STSM applicants submit their STSM applications online at <https://e-services.cost.eu/STSM>



STSM – Evaluation of Applications

- The evaluation of each received STSM application is performed by the Action Management Committee (MC).
- The Action Chair (or Vice-Chair if the Action Chair is affiliated to the Grant Holder Institution) or the appointed STSM Coordinator / Committee can assume this responsibility if the Action MC gives them the mandate to perform this task on their behalf.
- The evaluation criteria defined by the Action MC should be communicated to all potential applicants.



STSM – Selection of Applicants

- The selection of successful STSM applicants must be done so in consideration of the scientific scope of the proposed mission and how the mission can support the Action in achieving its scientific objectives.
- There should be special considerations made by the Action MC with respect to supporting COST policies on promoting gender balance, enabling Early Career Investigators (ECI), broadening geographical inclusiveness.



Criteria for a regular STSM

- Minimum duration of 5 calendar days.
- Maximum duration of 90 calendar days.
- An STSM needs to be carried out in its entirety within a single Grant Period and always within the Action's lifetime.



Special Criteria for Early Career Investigators (ECI)

- Specific additional provisions have also been made possible to encourage the participation of Early Career Investigators (ECI) in STSM.
- To qualify for these specific provisions, the following conditions apply:
 - minimum duration of 91 calendar days.
 - maximum duration of 180 calendar days.
 - STSM performed by ECI need to be carried out in their entirety within a single Grant Period and always within the Action's lifetime.



COST assumes no responsibility!

- The COST Association and the Grant Holder of the Action cannot to be considered as being an STSM grantee's employer.
- STSM grantees must make their own arrangements for all provisions related to:
personal security,
health,
taxation,
social security
and pension matters.



STSM – Financial Support

- An STSM Grant is a fixed financial contribution which takes into consideration the budget request of the applicant and the outcome of the evaluation of the STSM application.
- STSM Grants do not necessarily cover all expenses related to undertaking a given mission.
- An STSM Grant is a contribution to the overall travel, accommodation and meal expenses of the Grantee.



STSM – grant calculation

- Up to a maximum of EUR 2 500 in total;
- Up to a maximum of EUR 160 per day can be afforded for accommodation and meal expenses.
- researchers from ITC can claim 50% of their STSM Grant when they complete the first day of their STSM.

The remaining 50% of the Grant is payable once the administrative requirements have been satisfied.



STSM – grant calculation for Early Career Investigators (ECI)

- Up to a maximum of EUR 3 500 in total can be afforded to ECIs for missions with a duration of between 91 and 180 calendar days;
- Up to a maximum of EUR 160 per day can be afforded for accommodation and meal expenses.



STSM – other

- The Action Chair (or Vice-Chair if the Action Chair is affiliated to the Grant Holder Institution) and / or the appointed STSM Coordinator / Committee can approve differentiated country rates to cover accommodation and meal expenses based on the perceived cost of living in the host country.



How to get your money back after an STSM?

- submit a scientific report within 30 calendar days from the end date of the mission:

to the Action Chair (or to the Vice-Chair if the Action Chair is affiliated to the Grant Holder Institution) / the appointed

STSM Coordinator / Committee

and to a senior researcher affiliated to the Host institution.

- When they do approve your report, you get your money back 😊/





COST Vademecum

- Check updates at <http://www.cost.eu/participate>



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Short - Term Scientific Missions in COST Action TU1208

- 2013 - 1
- 2014 - 5
- 2015 - 12
- 2016 - 10
- 2017 - 7

- total 35





TU1208 STSM Examples - 1

STSM

**COMPARISON OF FINITE-DIFFERENCE AND FINITE-INTEGRATION
METHODS IN THE TIME-DOMAIN FOR THE SIMULATION OF GPR AND
OTHER ELECTROMAGNETIC APPLICATIONS**

AUTHOR: ALESSIO VENTURA, ROMA TRE UNIVERSITY, ROMA, ITALY

HOST INSTITUTION: THE UNIVERSITY OF EDINBURGH, EDINBURGH, UK

STSM DATES: 18 APRIL – 22 APRIL 2016

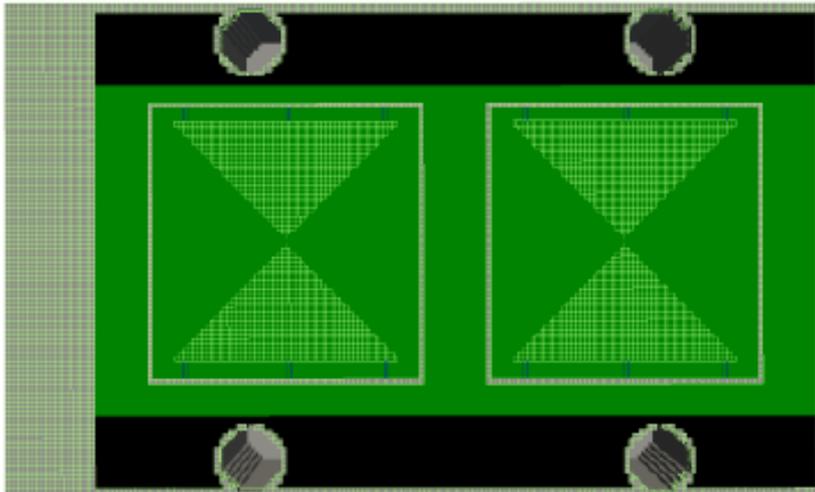


Figure 5 – MALA 1.2 GHz modeled by using gprMax

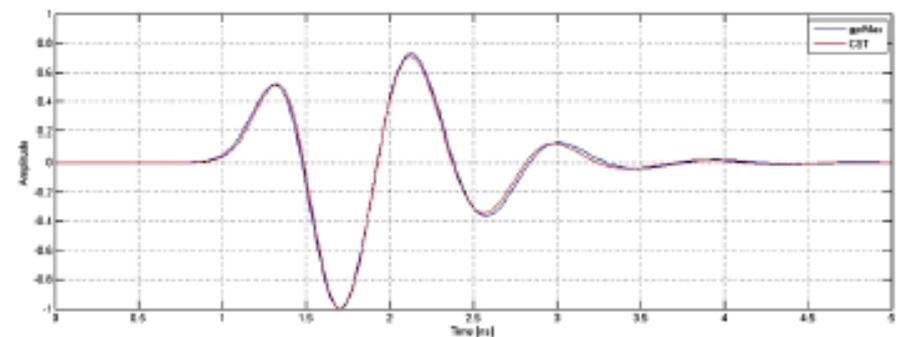
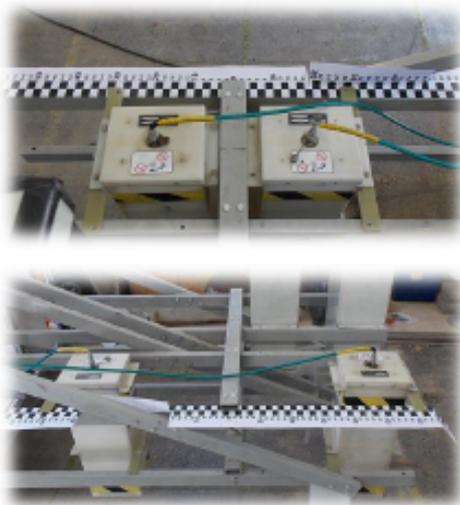


Figure 6 – MALA 1.2 GHz crosstalk in free space

TU1208 STSM Examples - 2

Report TU1208-30692

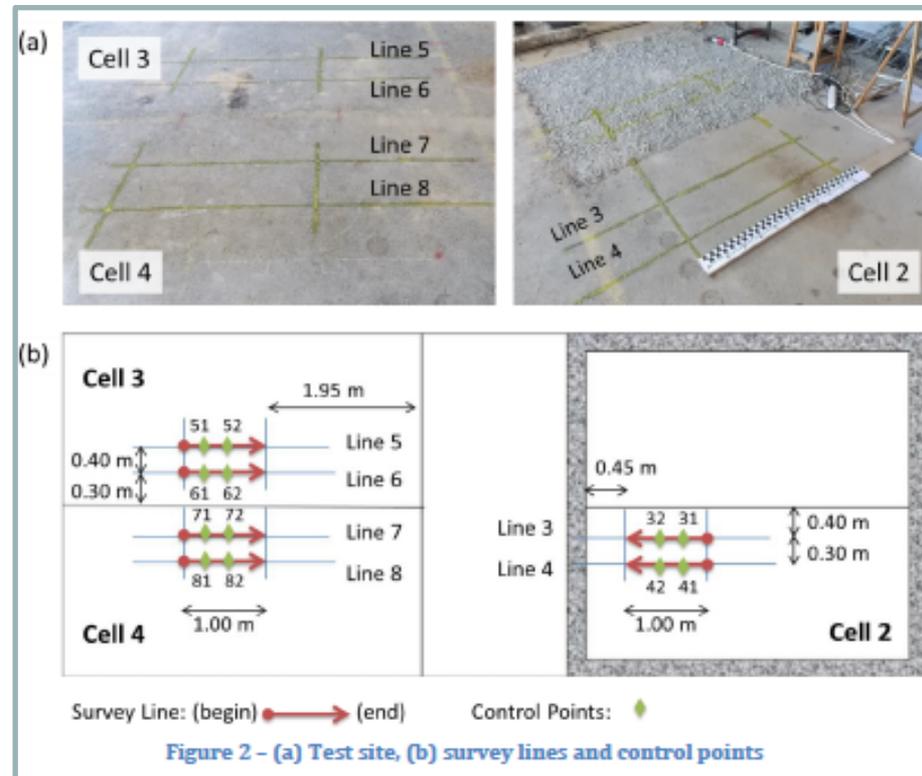
Calibration Methods for Air Coupled Antennas



Author: Vânia Marecos, LNEC, Lisbon, Portugal

Host Institution: Defense University Center, University of Vigo, Spain

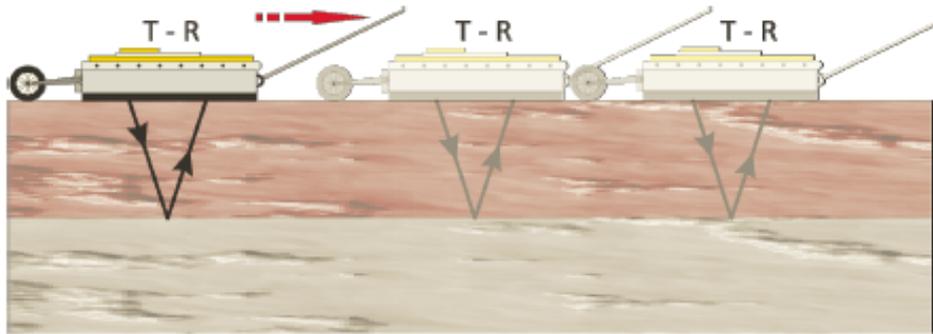
STSM Dates: 29 November 2016 – 12 December 2016



TU1208 STSM Examples - 3

STSM Report TU1208 - 220216-071671

An Educational Package to teach GPR in the University
(undergraduate students)



Visiting Scientist:

Vega Perez-Gracia, Universitat Politècnica de Catalunya, Barcelona, Spain

Host Institution: "Roma Tre" University, Rome, Italy (Lara Pajewski)

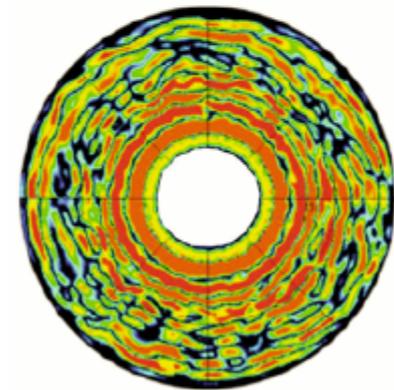
STSM Dates: 22-02-2016 to 26-02-2016



(a)



(b)



(c)

Fig. 1. (a) Section of a surveyed column. (b) Photo of a surveyed column. (c) A radargram obtained on a perimetric radar line.

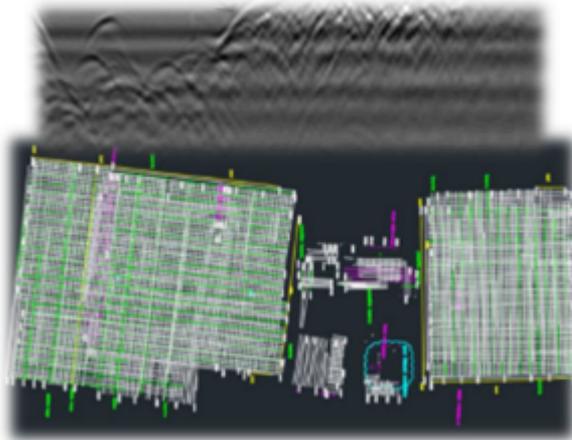
TU1208 STSM Examples - 4

COST Action TU1208

“Civil Engineering Applications of Ground Penetrating Radar”

Report TU1208_33780

GPR applications in civil engineering collaborating with a Company and preparation of material for the educational package to teach in Universities



STSM Visiting Scientist (Early-Career Investigator): PhD student Viviana Sossa (Spain)
STSM Host (Early-Career Investigator): Dr Sonia Santos Assunção (Ireland)

STSM Dates: 25-04-2016 to 29-04-2016

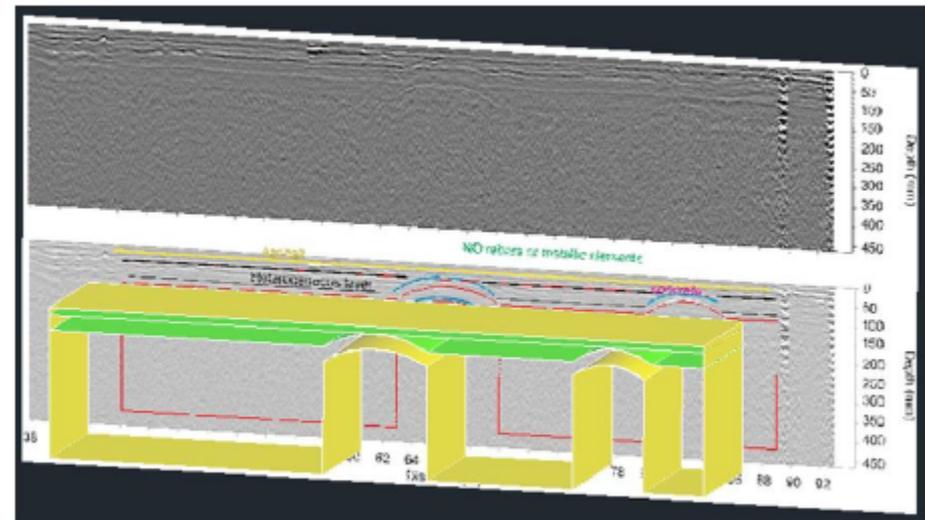


Fig. 14. Interpretation of the building structures and representation of the anomalies in the radar data, associated to these structures.

TU1208 STSM Examples - 5

Report COST-STSM-TU1208-33617

Coupled WKB approach applied to ground penetrating radar

Author: Prof. Alexei Popov

Pushkov Institute of Terrestrial Magnetism, Ionosphere and Radio Wave Propagation

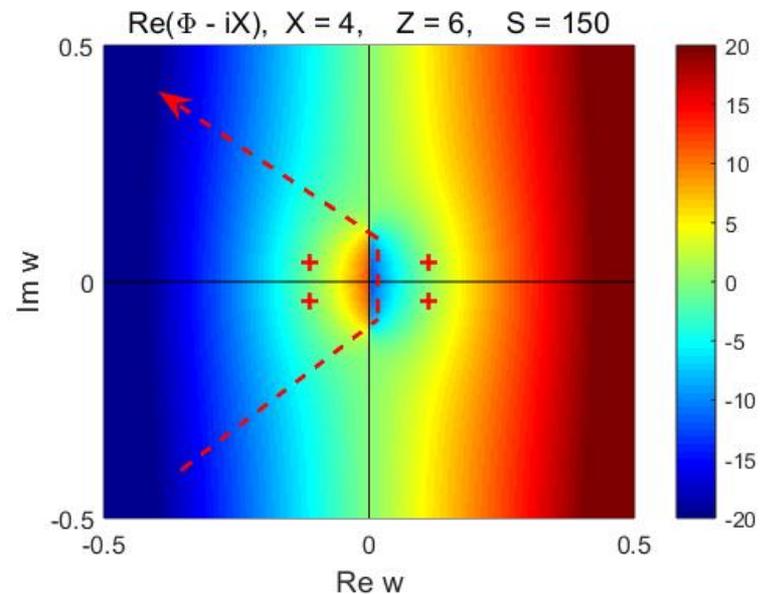
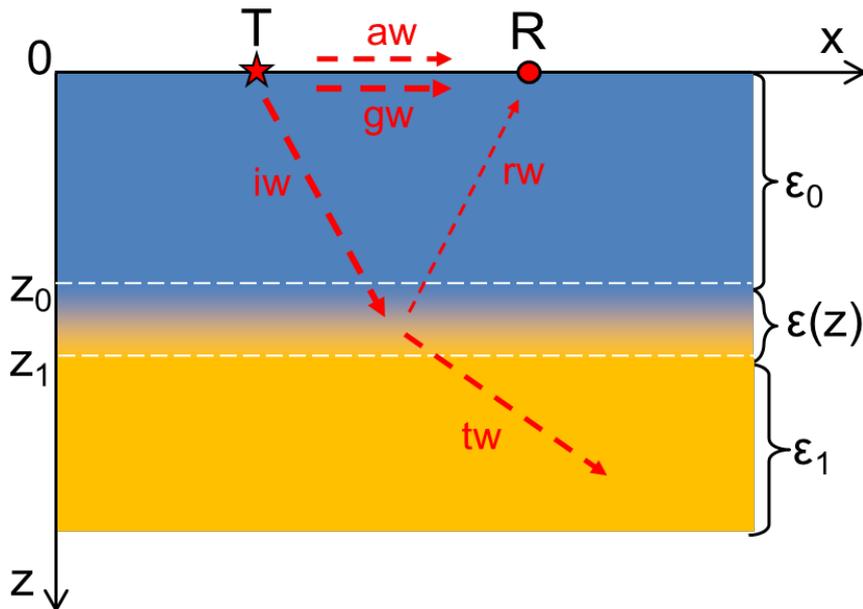
Moscow, Troitsk, Russia

Host Scientist: Marian Marciniak

National Institute of Telecommunications,

Warsaw, Poland

STSM Dates: April 24 – April 30 2016



TU1208 STSM Examples - 6

Report TU1208-34990

Testing of a new lightweight radar system for tomographical reconstruction of circular structures



Author: Alessandro Fedeli, University of Genoa, Genoa, Italy

Co-Authors: Jana Ježová and Sébastien Lambot,
Université catholique de Louvain, Louvain-la-Neuve, Belgium

Host Institution: Université Catholique de Louvain,
Louvain-la-Neuve, Belgium

STSM Dates: September 12 - September 23, 2016

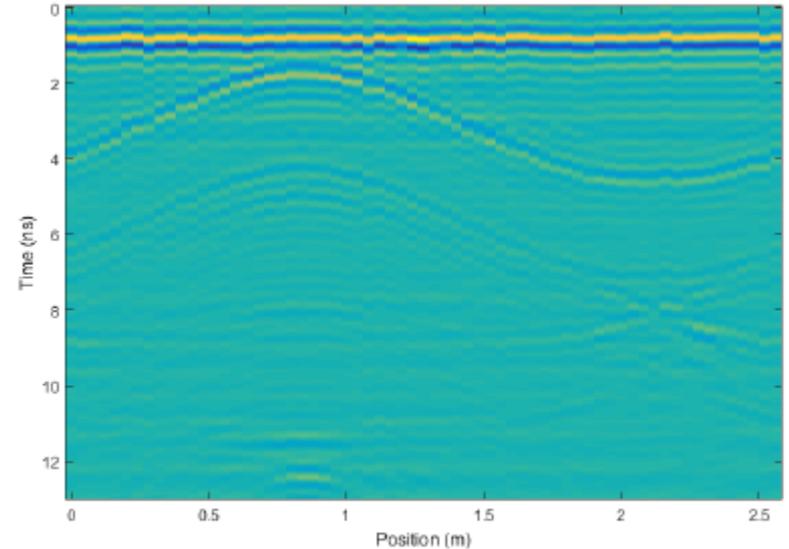


FIG. 31 – Circular cylinder with void inclusion. B-scan acquired with antenna #1 at a distance $d = 0.1$ m from the sample. Antenna filters are applied.

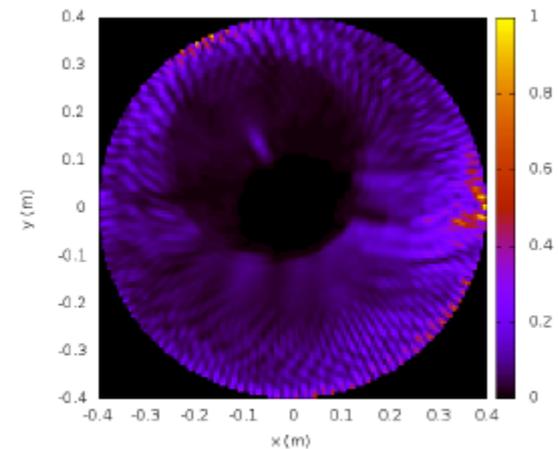


FIG. 34 – Circular cylinder with void inclusion. Qualitative reconstruction result obtained with antenna #2 at a distance $d = 0$ m from the sample.



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TU1208 STSM Examples - 7

COST Action TU1208

“Civil Engineering Applications of Ground Penetrating Radar”

Report TU1208-36995

Integrated Geophysical Investigations of Sites of Cultural Interest

STSM Dates: from March 5 to March 18, 2017



Photograph taken at the end of the ERT investigation in Mgarr

Visiting Scientist: Raffaele Persico, Institute for Archaeological and Monumental Heritage IBAM-CNR, Italy

Host Scientist: Sebastiano D'Amico, University of Malta, Malta

Authors of the present report: Raffaele Persico^{1,2}, Sebastiano D'Amico³, Enzo Rizzo⁴, Luigi Capozzoli⁴, Aaron Micallef³

Host Institution: University of Malta, Msida, Malta

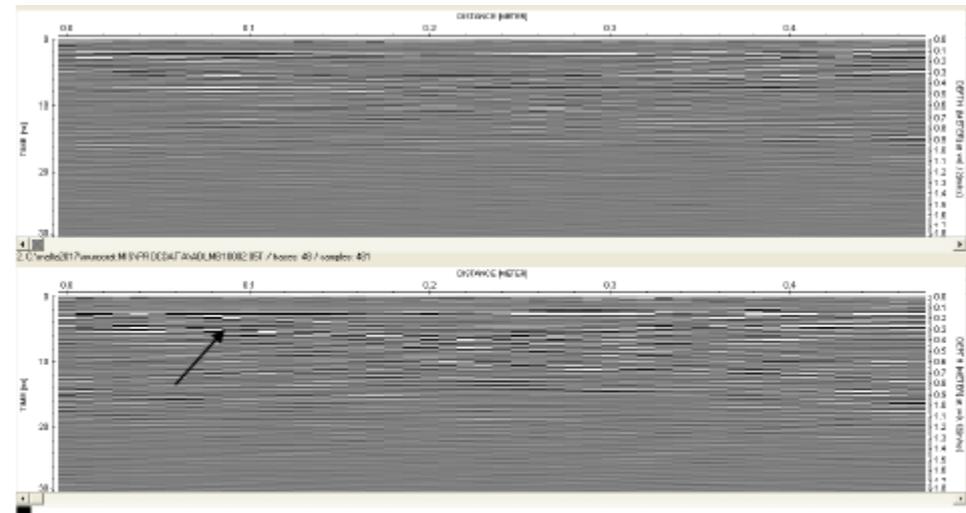


Fig. 21: Upper panel: BScan gathered on an ashlar of 14 cm in the co/cathedral of St. John. Lower panel: BScan gathered along the same path with a metallic sheet behind the ashlar.

Conclusions

- The STSM exchange went smoothly and very efficiently for the benefit of TU1208 Action's research agenda.
- Young researchers have been particularly active!
- A durable long-term cooperation has been initiated in all cases.
- It has been my great pleasure to cooperate with Lara, Andreas, Action's Management Committee and COST Office, as well as to serve the numerous STSM Applicants and Hosts – thanks to ALL!!!



About the author

Dr. Sc. Marian Marciniak (marian.marciniak@ieee.org), STSM Manager of COST Action TU1208 “Civil engineering applications of Ground Penetrating Radar,” is a Professor at The National Institute of Telecommunications in Warsaw, PL. His research interests include electromagnetic wave theory, optical communications, photonics, and sub-wavelength photonics. He served as the Chairman for COST Action MP0702 „Towards Functional Sub-Wavelength Photonic Structures” (2008-2012). He serves as one of The Editors-in-Chief for Optical and Quantum Electronics (Springer).

