

URSI Austria Commission Meeting – Graz

1st December 2020

Institute for Microwave and Photonic Engineering

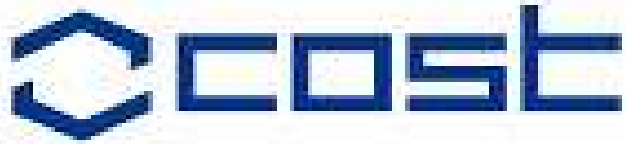
***URSI – B, Fields and Waves: Current
activities in Microwave Photonics and
Communications at TU Graz***

URSI - B Austria

**Beitrag der TU Graz zu COST Actions
und internationalen Projekten**



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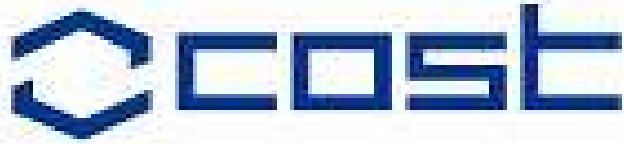


IHF, Currently involved in 2 COST Actions related to Photonics and Optical Communications

URSI Austria Commission Meeting, Graz

Beitrag der TU Graz zu COST Actions und internationalen Projekten

"Contributions of TU Graz in COST Actions and International Projects" CA 15127 (RECODIS, closed), CA 16220, and "European Network on Future Generation Optical Wireless Communication Technologies" (NEWFOCUS) CA19111 national project TRITON, Phorsch!!, CoBCom 2020 Conference



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COST Actions: IC1101 (till 2016) followed by CA19111

Beitrag der TU Graz zu COST Actions und internationalen Projekten

Contributions of the OptiKom_IHF_TUG at Institute for Microwave and Photonic Engineering TU Graz in international projects, URSI Austria and to Photonics Austria

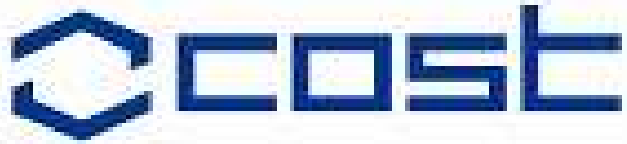
COST Actions: In 2020 CA 15127 (RECODIS, closed in spring 2020), CA 16220 (started in 2017), “European Network on Future Generation Optical Wireless Communication Technologies” (NEWFOCUS) CA19111, (Kick-Off in 9/2020)

URSI – B “Fields and Waves”



EUROPEAN COOPERATION IN SCIENCE AND TECHNOLOGY

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Contributions to URSI – B “Fields and Waves”

Beitrag der TU Graz zu COST Actions und internationalen Projekten (inklusive Konferenzen und nationale Projekte)

TRITON (finishing in 2 / 2021)

Phorsch! (started in 5 / 2020)

and IEEE Tech. Co-Spons. conferences organised at IHF: ConTEL 2019 (July 2019) and CoBCom 2020 in July 2020, (virtual)

Current CA19111, European Network on Future Generation Optical Wireless Communication Technologies (NEWFOCUS)

COST Action CA19111: 4 major areas, associated with dedicated Working Groups (WGs)

WG1: Ultra-short-range links

WG 2: Short-range links

WG 3: Medium-range links

WG 4: Long-range links

including different Applications Scenarios and co-operations with regulation- and standardization bodies

Kick-Off virtual in September 2020, first STSM's and planned summer school and workshop in 2021

Finished COST CA 15127 (RECODIS)

COST Action CA 15127 : Resilient communication services protecting end-user applications from disaster-based failures (RECODIS) <http://www.cost-recodis.eu/> (closed in spring 2020)

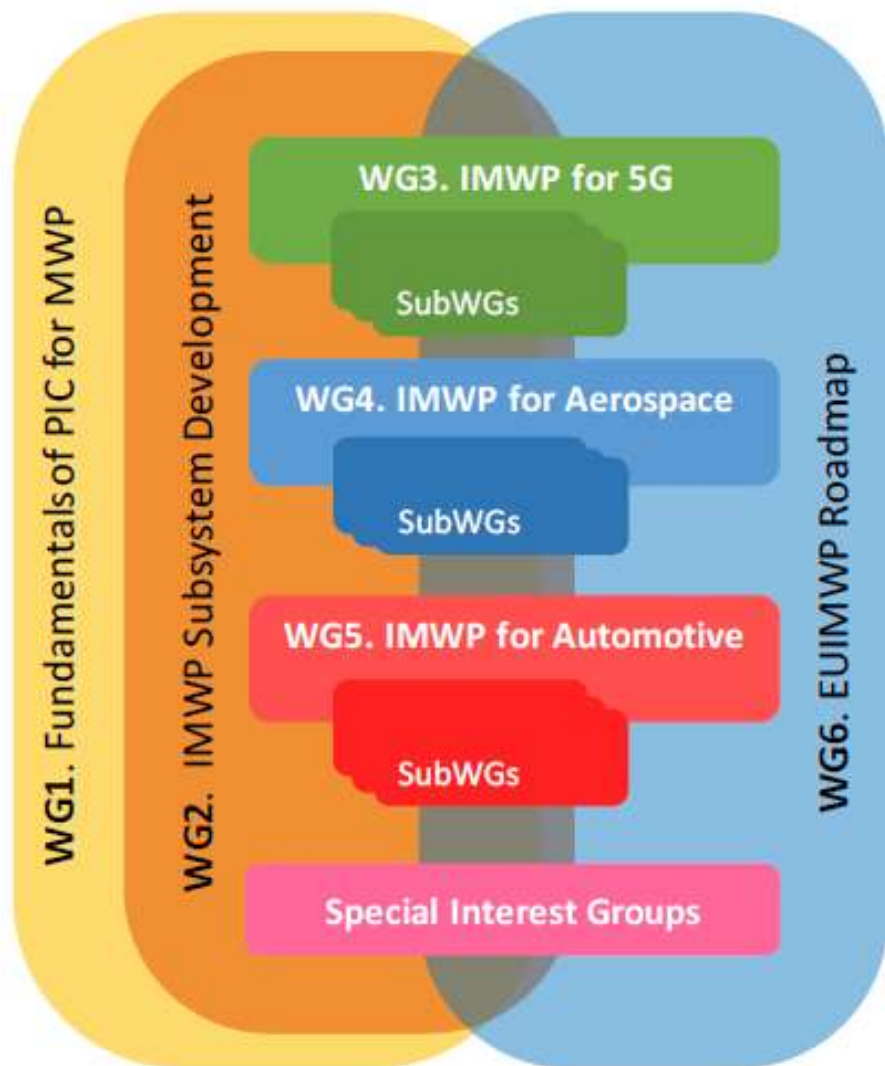
WG1: Large-scale natural disasters

WG 2: Weather-based disruptions

WG 3: Technology-related disasters

WG4: Malicious human activities

Each WG focused on different classes of challenge to communication networks; **Book** as final document is published as Springer book; **2 chapters are authored by OptiKom_IHF_TUG**



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COST CA 16220

European Network for High Performance Integrated Microwave Photonics

**...well suited to the national
project TRITON (finalised in
2 / 2021)**

Next meeting planned as virtual

National Research project Triton

“Heterogeneous Integration of Millimeter-Wave Technology”

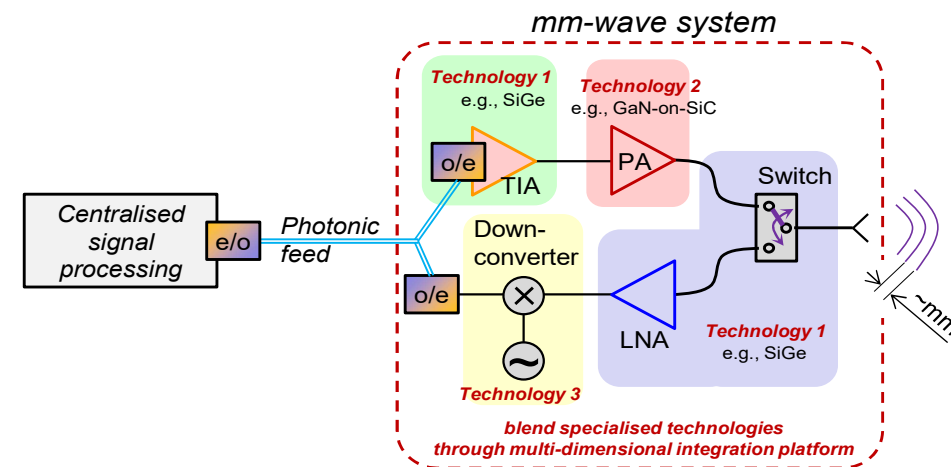
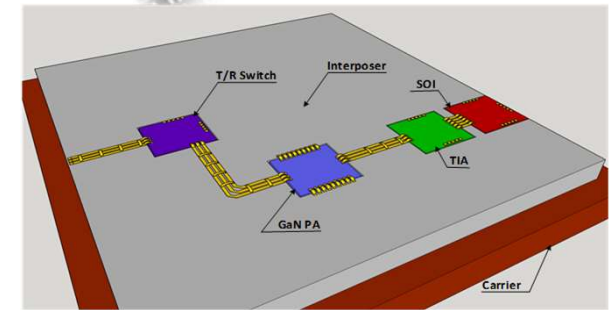
- Program: Production of the Future
- Funded by:
 - Austrian Research Promotion Agency (FFG)
 - Austrian Ministry for Transport, Innovation and Technology (bmvit)
- Duration: May 2017 – April 2020 (extended 2 / 21)
- Partners:
 - Austrian Institute of Technology – Lead partner
 - Vienna University of Technology
 - Infineon Technologies AG
 - ams AG
- Overall project volume: € 2,7 Mio



Triton “Heterogeneous Integration of Millimeter-Wave Technology



- Research goals:
 - Heterogeneous integration
 - Implementing photonic to mm-wave radio link transition
- Supported technologies:
 - Si CMOS interposer
 - SiGe: Transimpedance amplifier (TIA)
Low noise amplifier (LNA)
 - GaN-on-SiC: Power amplifier
 - Flexible and large scale
2.5D hetero integration



Phorsch! – Photonik für Schulen!

Im Projekt wird Schüler*innen die Photonik als Schlüsseltechnologie des 21. Jh. durch forschendes Lernen begreifbar gemacht

Photonik, (die Technologie des Lichts), Anwendung im Bereich der Informations- und Kommunikationstechnologie, von Beleuchtung und Displays ebenso wie in der Industrie für Laserproduktionstechnik und Sensorik

FFG Projekt (unter Leitung TU Graz) in Kooperation mit FH Technikum Wien, FH Vorarlberg, Photonics Austria und ams AG; dabei werden an 8 Schulen, in 3 Bundesländern interaktive Workshops zum Thema Photonik abgehalten

Kick-Off Meeting 8 / 2020 (FFG Genehmigung 5 / 2020)

Conference Organisation at TU Graz since 2008 at IBK (4410) and since 2011 at IHF (4510)



The Mediterranean Journals:
- Computer & Networks
- Electronics & Communications

IEEE Communications
Chapter - UK/RI

2008 and 2011 Communication field: CSNDSP 08 and ConTEL 2011 (starting activities)



6th Symposium on Communication Systems, Networks and Digital Signal Processing (**CSNDSP 08**), 23-25 July 2008, ~ 250 Participants

11th International Conference on Telecommunications (**ConTEL 2011**), June 15-17, 2011, *always in Zagreb before*, ~ 200 Participants, together with COST IC0802 Meeting and Workshop

2019 and 2020

CoBCom 2020 *new Conference initiated in 2016*

In 2020, 3rd International Conference on Broad-band Communications for Next Generation

Networks and Multimedia Applications, Graz, July 4th -

6th, *2020*, <https://www.cobcom.tugraz.at>


!! COVID-19 !! completely virtual !!

ConTEL 2019 *since 2011 every 4 years in Graz,*

before every 2 years in Zagreb (also planned in 2021) In 2019, the

15th International Conference on Telecommunications, in July, 2019, at Graz University of

Technology, <http://www.contel.hr/2019/>



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Prime Contractor Joanneum Research

IHF (Optical Communications Hardware Development) as Subcontractor

F. Subcontractors: RUAG Switzerland (later TAS), RUAG Sweden, Airbus Toulouse

System Study of Optical Communications with a Hybridised Optical/Rf Payload Data Transmitter

Kick-Off Meeting (Start 4th November 2015)

Finished 12 / 2019

Bread-Board Demonstrator / Final Measurements

