

Institute of Microwave and Photonic Engineering

The Institute of Microwave and Photonic Engineering at Graz University of Technology was founded in 2010.

It incorporates five research groups with emphasis on radar & wave propagation, microwave technology & measurements, RFID technologies, microwave components & filters and optical systems.

Only recently to facilitate innovation and to promote new cooperative research activities a state of the art microwave and mmW laboratory, spacious cleanroom facilities and an anechoic chamber were implemented.

The Institute and its facilities are nicely located in the middle of one of the few Electronic Clusters in Europe formed by a number of large Electronic companies, SMEs and start-up companies in Graz / Austria.

Overall 30 expert staff are currently employed by the Institute.

www.ihf.tugraz.at

SCIENCE • PASSION • TECHNOLOGY



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Institute of Microwave and **Photonic Engineering** Automotive Radar

Sensor Stimulation

in cooperation with

AVL List GmbH



Institute of Microwave and Photonic Engineering



Institute of Automation and Control





Testing ADAS

Problem

How to release or certify an ADAS enabled vehicle for use on public roads?

Validation challenges

- Uncountable possible scenarios for a vehicle
- Necessity to coexist with conventional (human being guided) systems
- New and high number of sensors for simulation and stimulation

Solution

Simulation of scenarios in a test-bed requests that the radar-sensor(s) is stimulated by artificial targetechos.

Radar Target Stimulation

Requirements

- Has to stimulate the radar to detect the simulated target at the correct distance, with the correct velocity and radar cross section.
- Has to be able to cope with complicated scenarios (stimulation of multiple targets)
- Even targets at short distances (< 5 m) shall be possible. At the moment this can only be accomplished by an analog system
- Shall not depend on a priori information about the radar-sensor used.

Our prototype radar target stimulator is higly scalable regarding distance and number of possible targets.

Further Services & Research topics

- Development of hard- and software of radar systems
- Studies and measurements of microwave propagation and radar systems
- Smart RFID technologies for a connected world
- LIDAR
- 3D-printing of millimeterwave filter structures
- Characterization, modelling and linearization of non-linear mirowave components and systems
- Design and measurements of antennas and communication systems
- Fully automated on-wafer measurements from 10 MHz up to 110 GHz, wafer mapping and laser trimming