

Inhaltsverzeichnis

Key Note

- 1 **Network Slicing to serve Vertical Industry Use Cases** 9
Nico Bayer (Deutsche Telekom AG)

Sitzung 1: RAN Evolution

- 2 **Monopulse-based THz Beam Tracking for Indoor Virtual Reality Applications** 10
Krishan Kumar Tiwari, Vladica Sark, Eckhard Grass, Rolf Kraemer (IHP)
- 3 **Self-Organizing Network Functions for Handover Optimization in LTE Cellular Networks** .. 14
Tanmoy Bag, Sharva Garg, Diego Preciado, Zubair Shaik, Andreas Mitschele-Thiel (TU Ilmenau),
Jens Mückenheim (HS Merseburg)
- 4 **Architectural Challenges for Multi-mode Small Cells for Indoor Coverage** 21
Sarmad Ghafoor, Ralf Tönjes (HS Osnabrück)

Invited Talk

- 5 **Challenges and Solutions for C-ITS Services over Long-Range C-V2X** 27
Maciej Muehleisen (Ericsson)

Sitzung 2: Leistungsmessung von Funknetzen

- 6 **A Framework for RAN Performance Evaluations based on Software Defined Radio** 28
Michael Einhaus, Igor Kim, Mohamad Buchr Charaf, Jens Klinger (HfTL)
- 7 **Analysis and classification of Wi-Fi access link influence on Internet throughput measurements** 34
Constantin Eiling, Andreas Grebe, Darius Aghili (TH Köln), Oliver Portugall (zafaco GmbH)
- 8 **Modelling and Analysis of Short Message Traffic in Terrestrial Mobile Communication Networks** 40
Stefanie Thieme, Matthias Schwamborn, Nils Aschenbruck (Uni Osnabrück)

Sitzung 3: Industrial Radio

- 9 **Avoiding Local Interference in IEEE 802.15.4 TSCH Networks using a Scheduling Function with Distributed Blacklists** 46
Leo Krüger, Lotte Steenbrink, Andreas Timm-Giel (TU Hamburg-Harburg)
- 10 **Dynamic Live Wireless Communication Monitoring for Jamming and Interference Detection in Industry 4.0** 52
Marc Zimmermann, Christian Schellenberger, Hans D. Schotten (TU Kaiserslautern):

- 11 To Supervise or Not – ML for UWB Close Range Obstacle Detection** 58
Raja Sattiraju, Jacob Kochems, Hans D. Schotten (TU Kaiserslautern)

Sitzung 4: Industrial Networks

- 12 Reliable and Deterministic Mobile Communications for Industry 4.0: Key Challenges and Solutions for the Integration of the 3GPP 5G System with IEEE Time-Sensitive Networking** .. 64
Christian Mannweiler, Borislava Gajic, Peter Rost, Rakash S. Ganesan, Christian Markwart, Rüdiger Halfmann (Nokia Bell Labs, München)
- 13 Time-Sensitive Software-Defined Networking: A Unified Control-Plane for TSN and SDN** .. 70
Martin Böhm, Jannis Ohms, Manish Kumar, Olaf Gebauer, Diederich Wermser (HS Ostfalia)
- 14 Design of a 5G Ready and Reliable Architecture for the Smart Factory of the Future** 76
Mathias Strufe, Michael Gundall, Hans D. Schotten (DFKI), Christian Markwart, Rakash SivaSiva Ganesan (TU Kaiserslautern)

Key Note

- 15 5G for Future Rail Operations – DB’s ambitious Plans for the Introduction of the Future Rail Mobile Communication System (FRMCS)** 81
Patrick Marsch (Deutsche Bahn AG)

Sitzung 5: Network Security I

- 16 Physical Layer Security for IIoT and CPPS: A Cellular-Network Security Approach** 82
Christoph Lipps, Mathias Strufe, Sachinkumar Bavikatti Mallikarjun und Hans D. Schotten (DFKI)
- 17 Proof-of-Location: A method for securing sensor-data-communication in a Byzantine fault tolerant way** 87
Volker Skwarek, Julian Reher, Lorenz Bornholt (HS Hamburg)

Sitzung 6: Network Security II

- 18 Distributed Ledger Technology for Trust Management Optimisation in M2M** 93
Besfort Shala, Ulrich Trick, Armin Lehmann (Frankfurt University of Applied Sciences), Bogdan Ghita, Stavros Shiaeles (University of Plymouth, UK)
- 19 Sicherheitsanalyse von Bluetooth-Low-Energy-Geräten in der Heimautomatisierung** 99
Kevin Fröhlich, Michael Rademacher, Karl Jonas (HS Bonn-Rhein-Sieg)
- 20 Modern Problems Require Modern Solutions: Hybrid Concepts for Industrial Intrusion Detection** 105
Simon Duque Antón, Mathias Strufe, Hans D. Schotten (DFKI)

Key Note

- 21 Maschinen vernetzen für die Landwirtschaft der Zukunft** 110
Andreas Wübbecke (Claas E-Systems GmbH)

Sitzung 7: Vehicular Communication

- 22 C-V2X – A Communication Technology for Cooperative, Connected and Automated Mobility 111**
Ralf Weber (Qualcomm, Germany), Jim Misener, Vince Park (Qualcomm Inc., San Diego, USA)
- 23 System-Level Simulator of LTE Sidelink C-V2X Communication for 5G 117**
Donglin Wang, Raja R.Sattiraju, Andreas Weinand, Hans D. Schotten (TU Kaiserslautern)
- 24 A Controller for Network-Assisted CACC based Platooning 122**
Sanket Partani, Andreas Weinand, Hans D. Schotten (TU Kaiserslautern)

Sitzung 8: Wireless Sensor Networks

- 25 IoTiSS: Internet of Things in Smart Streetlighting 128**
Marco Cimdins, Wiland Arlt, Horst Hellbrück (TH Lübeck)
- 26 LoRaWAN in a rural context: Use cases and opportunities for agricultural businesses 134**
Alexander Grunwald, Marco Schaarschmidt, Clemens Westerkamp (HS Osnabrück)
- 27 Implementation of an IEEE 802.15.4 Compliant Fully Self-organized Cluster-based Wireless Sensor Network 140**
Volker Delpert, Christian Georgi, Vinzenz Lorenz (HS Mittweida), Jan Kuhnert (Kathrein GmbH), Silvio Roessler (Preh Car Connect GmbH)