

Inhaltsverzeichnis

0.1 Keynote 1	
Geschäftsmodelle für den Breitbandausbau – Rahmenbedingungen für den Erfolg	9
T. Plückebaum (WIK-Consult GmbH, Bad Honnef)	
0.2 Keynote 2	
Vodafone transport network today and future requirements	
T. Weidlich (Vodafone GmbH, Eschborn)	
<i>Beitrag lag nicht vor</i>	
Session 1: Networks	
Andreas Kirstädter	
1.1 Adaptive Routing and Spectrum Assignment in Flexgrid Optical Networks	20
R. R. Reyes, T. Bauschert (Technische Universität Chemnitz)	
1.2 Sustainability in Photonics – An Introduction	27
K. Grobe (ADVA Optical Networking SE, Martinsried)	
1.3 Optical Flexibility – A Router Point of View	33
G. Grammel (Juniper Networks GmbH, München)	
1.4 Coexistence of PSK quantum key distribution and WDM in optical transmission systems ...	36
S. Kleis, C. G. Schäffer (Helmut Schmidt Universität/Universität der Bundeswehr Hamburg)	
Session 2: Access	
Jörg-Peter Elbers	
2.1 Comparison of Wavelength-Routed and Wavelength-Split WDM-PON in Mobile x-Haul in dense urban areas	41
B. Kanj, C. Mas Machuca, K. Grobe (Technische Universität München, ADVA Optical Networking SE, Martinsried)	
2.2 TWDM-PON in an ONU Amplified ODN using 170 Gbit/s DS and 40 Gbit/s US and supporting 51.5 dB loss budget	46
W. Pöhlmann, R. Bonk, H. Schmuck, J. Hehmann, M. Straub, Th. Pfeiffer (Nokia, Bell Labs, Stuttgart)	
2.3 How to design an optimized set of fiber-trees for filterless optical networks – The elegance of a multi-goal evolutionary Pareto optimization versus a brute-force approach	51
S. Krannig, R. Mögel, M. Gunkel, N. Michaelis, F. Wissel, B. Drossel (Deutsche Telekom Technik GmbH, Darmstadt, Technische Universität Darmstadt)	

- 2.4 Cost-efficient Upstream Transmitter Using Injection Locked Fabry-Pérot Laser Diodes for Multi-Gbit/s WDM-PON** 59
 A. Emsia, Q. Trung Le, R. Emre Gündoğdu, M. Malekizandi, E. In de Betou, M. Olson, J. Keck, R. Herber, K. Rienecker, M. Fricke, F. Küppers (Technische Universität Darmstadt, Transmode Systems AB, Stockholm, Sweden, Deutsche Telekom Technik GmbH, Darmstadt)
- 2.5 Evaluation of Crosstalk Attacks in Access Networks** 67
 C. Wagner, M. Eiselt, K. Grobe, J. L. Wei, J. J. Vegas Olmos, I. Tafur Monroy (Technical University of Denmark, ADVA Optical Networking SE, Meiningen, ADVA Optical Networking SE, Martinsried)

Session 3: SDN & NFV

Stefan Spälter

- 3.1 Efficient Partial Recovery of Flexible-Rate Transceivers with SDNbased Asymmetric Multipath Routing of IP Traffic** 70
 M. Gunkel, F. Wissel, J. Blendin, D. Herrmann, M. Wichtlhuber, D. Hausheer (Deutsche Telekom Technik GmbH, Darmstadt, Technische Universität Darmstadt)
- 3.2 Live Migration Downtime Analysis of a VNF Guest for a Proposed Optical FMC Network Architecture** 76
 B. Andrus, A. Autenrieth, S. Pachnicke, J. J. Vegas Olmos, I. Tafur Monroy (Technical University of Denmark, ADVA Optical Networking SE, Martinsried, ADVA Optical Networking SE, Meiningen)
- 3.3 Virtualization in high-throughput network elements and its impact on energy consumption** 81
 H. Woesner, C. Lange, R. Schlenk, M. Schlosser, D. Kosiankowski (BISDN GmbH, Berlin und Deutsche Telekom AG, Berlin, Nokia Solutions and Networks GmbH & Co. KG, Nürnberg, Fraunhofer Heinrich Hertz Institut, Berlin)
- 3.4 Transport Software-defined Networking – improving operational efficiency** 87
 P. Lüsse, R. Martinotti (Huawei Technologies Deutschland GmbH, Darmstadt)

Session 4: Transmission I

Hans-Joachim Grallert

- 4.1 Performance Analysis of Adaptive Hybrid ARQ for Inter-HAP Free-Space Optical Fading Channel with Delayed Channel State Information** 89
 S. Parthasarathy, A. Kirstädter, D. Giggenbach (Deutsches Zentrum für Luft- und Raumfahrt e.V., Weßling, Universität Stuttgart)
- 4.2 Variable data rate for Optical Low-Earth-Orbit (LEO) Downlinks** 96
 A. Shrestha, D. Giggenbach (Deutsches Zentrum für Luft- und Raumfahrt e.V., Weßling)
- 4.3 Experimental Evaluation of a (4x4) Multi-Mode MIMO System Utilizing Customized Optical Fusion Couplers** 101
 A. Sandmann, A. Ahrens, S. Lochmann (Hochschule Wismar)
- 4.4 The effect of I/Q imbalance on high-speed optical OFDM transmission links using a real-time transmitter** 106
 K. Habel, L. Fernandez del Rosal, C. Kottke, M. Koeppe, V. Jungnickel (Fraunhofer-Institut für Nachrichtentechnik, Heinrich-Hertz-Institut, Berlin)

4.5 First 20 Gbit/s Burst-Mode OOK Upstream with Direct Modulated Laser over up to 50 km Single Mode Fiber	110
W. Poehlmann, H. Schmuck, R. Bonk, Th. Pfeiffer (Nokia, Bell Labs, Stuttgart)	

Session 5: Transmission II

Andreas Leven

5.1 RoF system experiment with 60 GHz carrier frequency and IQ data modulation	114
Z. Al-Husseini, N. Neumann, D. Plettemeier (Technische Universität Dresden)	
5.2 Implementation of Eigenvalue Multiplex Transmission with a real Fiber Link using the Discrete Nonlinear Fourier Spectrum	122
A. Geisler, C. G. Schäffer (Helmut Schmidt Universität/Universität der Bundeswehr Hamburg)	
5.3 Optimizing Discrete Multi-tone Transmission for 400G Data Center Interconnects	128
A. Dochhan, H. Griesser, N. Eiselt, M. Eiselt, J.-P. Elbers (ADVA Optical Networking SE, Meiningen, ADVA Optical Networking SE, Martinsried, Technical University of Denmark (DTU))	
5.4 Experimental Comparison of 56 Gbit/s PAM-4 and DMT for Data Center Interconnect Applications	134
N. Eiselt, A. Dochhan, H. Griesser, M. Eiselt, J. J. Vegas Olmos, I. Tafur Monroy (Technical University of Denmark (DTU), ADVA Optical Networking SE, Meiningen, ADVA Optical Networking SE, Martinsried)	

Session 6: Equalization

Bernhard Schmauß

6.1 Effective Mitigation of Non-linearities Using Extended Kalman Filtering for Dispersion Managed Links	139
L. Pakala, B. Schmauss (Friedrich-Alexander-Universität Erlangen-Nürnberg)	
6.2 Equalization for Fiber-Optic Transmission Systems: Low-Complexity Iterative Implementations	144
W. G. Teich, M. A. Ibrahim, F. Wäckerle, R. F. H. Fischer (Universität Ulm)	
6.3 Reducing the Mode Dependent OSNR Requirements in SDM Systems due to Nonlinear Effects by Using Adaptive Symbol Rates	152
M. Brehler, P. M. Krummrich (Technische Universität Dortmund)	
6.4 Cross-Domain Equalization Performance Analysis for SNR-limited Multi-Mode fibre channel	158
C. Zerna (Fraunhofer IIS, Erlangen)	

Session 7: Systems and Components

Christian-Alexander Bunge

7.1 Plasmonics – a Solution for Ultra-Compact High-Speed Photonics?	163
C. Haffner, W. Heni, Y. Fedoryshyn, B. Baeuerle, A. Josten, C. Hoessbacher, Y. Salamin, J. Leuthold (ETH Zürich, Schweiz)	

7.2	Accelerated Testing of Polarization-Tracking Receiver Using Polarization Scrambler with Peaked Speed Distribution	168
	B. Koch, R. Noé, D. Sandel, V. Mirvoda (Universität Paderborn)	
7.3	Practical Challenges and Solutions for Fiber-based Mobile Front and Backhauling	171
	S. Adhikari (HUBER+SUHNER Cube Optics AG, Mainz)	
7.4	Weit abstimmbare Sender (MEMS-VCSEL) bei 1550 nm für photonische Netze	175
	J. Cesar, S. Paul, F. Küppers, B. Kögel, C. Gréus, C. Neumeyr, M. Ortsiefer, I. Ibrahim, H. Schmidt, J. Schmidt, M. Eiselt (Technische Universität Darmstadt, Vertilas GmbH, Garching, DEV-Systemtechnik, Friedberg, ADVA Optical Networking, Meiningen)	