

Program

Photonic Networks

26th VDE ITG Conference on
Photonic Networks (PN 2025)

May 20 – 21, 2025

Fraunhofer Heinrich-Hertz-Institut, Berlin

www.vde.com/pn

26th VDE ITG conference “Photonic Networks”

The VDE ITG Technical committee KT 3 “Optische Nachrichtentechnik” and VDE ITG Working group KT 3.3 “Photonische Netze” organise the 26th VDE ITG conference “Photonic Networks” on May 20th – 21st, 2025.

Conference chairs

Prof. Dr.-Ing. Sebastian Randel
Institute of Photonics and Quantum Electronics
Karlsruher Institut für Technologie (KIT)

Prof. Dr.-Ing. Georg Rademacher
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Organization

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Technical committee members:

- Prof. Dr.-Ing. Thomas Bauschert, TU Chemnitz
- Dipl.-Ing. Matthias Berger, II-VI
- Dr.-Ing. Dirk Breuer, Deutsche Telekom AG
- Prof. Dr.-Ing. Christian-Alexander Bunge, HTWK Leipzig
- Dr.-Ing. Jörg-Peter Elbers, ADVA Optical Networking SE
- Dr. Chris Fludger, Infinera
- Prof. Dr.-Ing. Ronald Freund, Technische Universität Berlin, Fraunhofer-Institut f. Nachrichtentechnik, Heinrich-Hertz-Institut
- Prof. Dr. Anna Lena Giesecke, Universität Duisburg-Essen
- Dr.-Ing. Andreas Gladisch, Deutsche Telekom AG
- Dr. Gernot Göger, HUAWEI Technologies Düsseldorf GmbH
- Prof. Dr.-Ing. Hans-Joachim Grallert
- Dr.-Ing. Helmut Grießer, Adva Network Security GmbH
- Prof. Dr.-Ing. Norbert Hanik, Technische Universität München
- Prof. Dr. Admela Jukan, TU Carolo-Wilhelmina zu Braunschweig
- Prof. Dr. Volker Jungnickel, Fraunhofer-Institut f. Nachrichtentechnik, Heinrich-Hertz-Institut
- Prof. Dr.-Ing. Andreas Kirstädter, Universität Stuttgart
- Prof. Dr. Christian Koos, Karlsruher Institut für Technologie
- Prof. Dr.-Ing. Peter Krummrich, TU Dortmund
- Dr.-Ing. Andreas Leven, Nokia Solutions and Networks GmbH & Co. KG
- Prof. Dr.-Ing. Carmen Mas Machuca, Uni der Bundeswehr München
- Dipl.-Ing. Christian Neumeyr, VERTILAS GmbH
- Prof. Dr.-Ing. Reinhold Noé, Universität Paderborn
- Prof. Dr.-Ing. Stephan Pachnicke, Christian-Albrechts-Universität zu Kiel
- Prof. Dr.-Ing. Klaus Petermann
- Prof. Dr.-Ing. Georg Rademacher, Universität Stuttgart
- Prof. Dr.-Ing. Sebastian Randel, Karlsruher Inst. für Technologie
- Prof. Dr.-Ing. Werner Rosenkranz, Christian-Albrechts-Universität zu Kiel
- Prof. Dr.-Ing. Christian Schäffer, Helmut-Schmidt-Universität
- Prof. Dr.-Ing. Christoph Scheytt, Universität Paderborn
- Prof. Dr.-Ing. Bernhard Schmauß, Universität Erlangen-Nürnberg
- Dr.-Ing. Christoph Schulien, Ranovus GmbH
- Dr. Bernhard Spinner, Infinera GmbH, München
- Prof. Dr.-Ing. Andreas Stöhr, Universität Duisburg-Essen
- Dr. Tolga Tekin, Fraunhofer IZM
- Dipl.-Phys. Andreas Umbach, AUCCEPT Consulting GmbH
- Dr.-Ing. Dirk van den Borne, Juniper Networks
- Dr. Thomas Weidlich, s&p Beratungs- und Planungsgesellschaft mbH
- Prof. Dr.-Ing. Jeremy Witzens, RWTH Aachen University
- Prof. Dr.-Ing. Lars Zimmermann, IHP GmbH

18:30 **Get together for PhD Students
and all young researchers**

08:30 **Welcome coffee**

09:00 – 09:15 **Welcome**
*Georg Rademacher (Institute of electrical
and optical communications, University of
Stuttgart)*

09:15 – 10:30 **Keynotes**

**History of optical fiber communi-
cations in Germany**
Andreas Gladisch (Deutsche Telekom)

Sensing in submarine links
Nicolas Fontaine (Nokia Bell Labs US)

10:30 – 11:00 **Coffee break**

11:00 – 12:30 Session 1: Signal Processing for optical networks and transceivers

- S1-1 **International Testbed Data Sharing Framework with Data Sovereign Features**
Angela Mitrovska (Fraunhofer HHI)
- S1-2 **Characterization of Subcomponents for Coherent O-band Transmission Systems**
Ogulcan Erdogan (Fraunhofer HHI)
- S1-3 **A DSP-aware Analysis of Equalization-Enhanced Phase Noise**
Sebastian Jung (Universität Stuttgart, INUE)
- S1-4 **Blind MIMO Equalization for 3-mode 16QAM Space-Division Multiplexed Transmission**
Pamir Oezsuna (Fraunhofer HHI / Universität Stuttgart, INT)
- S1-5 **Signal Processing Techniques for Suppressing Fading and Improving the Reliability of Coherent Correlation OTDR**
Vishal Chandraprakash Rai (Adtran Networks)
- S1-6 **Improved Digital Signal Processing for Distributed Optical Fiber Sensing using coherent OTDR**
Tobias Philipp (Kiel University, Chair of Communications)
- 12:30 – 14:00 **Lunch break**

14:00 – 16:00 Session 2: PON

- S2-1 *Invited* **Recent Advances in High-Speed Optical Access Networks**
Christoph Füllner (Nokia)
- S2-2 **Dependability Analysis Between Optical Access and Power Grid Networks**
Cristian Bermudez Serna (Chair of Communication Networks, University of the Bundeswehr Munich)
- S2-3 **Novel Type of Fiber Network Intrusion and Ways of Detection**
Pablo Roberto Castro Ayala (Adtran Networks)

**Panel discussion:
Which will be the dominant technology for future PONs?**

Panelists: *Rene Bonk (Nokia)*
Martin Kuipers (Adtran Networks)
Sebastian Randel (KIT)
Volker Jungnickel (HHI)
Hagen Wösner (BISDN)

16:00 – 18:00 **Posters and beverages**

P Poster Session

- P1 **2.88 Tbit/s Single-Carrier Transmission Over 150 km of Randomly-Coupled Four-Core Fiber**
Jonas Krimmer (Karlsruhe Institute of Technology)
- P2 **Impact of Fixed-Point Input Quantization on Performance in Partitioned MIMO Equalization**
Nicolas Braig-Christophersen (Fraunhofer Institute for Telecommunications, Heinrich-Hertz-Institut (HHI))
- P3 **Active Power Management for Subcarrier Performance Equalization of Real-time Coherent Digital Subcarrier Transceivers**
Jacqueline Sime (Infinera, Nuremberg, Germany)
- P4 **Resilient all-photonic networks with AI-enabled silicon photonic switch**
Jonathan Förste (Ludwig-Maximilians-Universität München, Germany)
- P5 **Design of a Continuous-variable Quantum Key Distribution System Using Silicon Photonics Technology**
Arezoo Zarif (Integrated Photonic Devices Group, Chair of RF and Photonics, Technische Universität Dresden, Germany)
- P6 **Thermo-Optical Resonance-Tuning of Micro-ring Resonators on Thin-Film LiNbO3**
Fabian Chowanek (Fraunhofer Institute for Telecommunications, Heinrich-Hertz-Institut (HHI))

- P7 **NOBS: A Telemetry and Monitoring Framework for 6G Networks**
Aydin Jafari (Fraunhofer Institute for Telecommunications Heinrich Hertz Institute, Berlin, Germany)
- P8 **Analyzing PON Energy saving potential using real network data**
Mirco Börner (Technische Hochschule Mittelhessen, Gießen, Germany)
- P9 **Investigation of optical network node architecture and optimum software-defined networking**
Tibor Cornelli (Ludwig-Maximilians-Universität München, Germany)
- P10 **Towards Unbalanced Splitter Deployment in Passive Optical Networks**
Ritanshi Agarwal (University of the Bundeswehr Munich, Germany)
- P11 **Frequency comb synthesis with DQPSK Mach-Zehnder modulator and neural network**
Raik Elster (Institute of Electrical and Optical Communications, Stuttgart, Germany)
- P12 **Bandwidth Estimation for Electro-Optical Transceivers using Overdetermined System of Equations**
Vinitha Johny (Institute for Electrical Information Technology, TU Clausthal-Zellerfeld, Germany)
- P13 **FSO Link Availability at Lightpath Rerouting in Hybrid Optical Networks**
Dmitry Khomchenko (VPIphotonics GmbH, Berlin, Germany)

- P14 **Modeling of a complete coherent FSO satellite communication link based on silicon photonics components**

Matthieu Oberon (IHP-Leibniz-Institut für innovative Mikroelektronik, Frankfurt (Oder), Germany)

- P15 **ML-based techniques to overcome nonlinear distortions in a coherent fiber-optical / THz wireless transmission link**

Elias Giacomidis (VPIphotonics GmbH, Berlin, Germany)

- 19:00 **Conference Dinner
at Paulaner in the Spreebogen
Alt-Moabit 98, 10559 Berlin**

08:30 **Welcome coffee**

09:00 – 09:45 **Keynote**

**Optical communications in the
age of AI**

Henning Lysdal (NVIDIA)

09:45 – 11:00 **Session 3: Data centers**

S3-1 **Optical components for data center
connectivity**

Martin Schell (HHL)

S3-2 *Invited* **High speed modulators**

Despoina Petousi (Adtran Networks)

S3-3 *Invited* **Connectorized parallel single mode
fiber-to-chip couplers for the scale-up
network**

Jeremy Witzens (aiXscale Photonics GmbH)

S3-4 **Broadband Analog Interleavers and
Deinterleavers for High Symbol Rate
Optical Communications**

Markus Grözing (Universität Stuttgart, INT)

11:00 – 11:30 **Coffee break**

11:30 – 13:00 Session 4: Free-space optics

- S4-1 *Invited* **DLR's current developments in optical communication for space**
Fabian Rein (DLR)
- S4-2 **Performance and Applications of Optical Pin Beams in Turbulent Long-Range Free Space Optical Communications**
Francesco Nardo (Airbus)
- S4-3 **Transfer-Matrix Statistics in SDM FSO Under Atmospheric Turbulence**
Jonas Krimmer (KIT)
- S4-4 **All-digital Online Timing Recovery for Optical Satellite Communication with a Kalman Filter**
Matti Ukkola (DLR)
- S4-5 **Photonic Assisted Point-to-Multipoint sub-THz Wireless Communication**
Joel Dittmer (KIT)

Closing

Conference venue

Fraunhofer Institut für Nachrichtentechnik,
Heinrich-Hertz-Institut
CINIQ
Salzufer 6, Access via the Otto-Dibelius-Straße
10587 Berlin

Directions to Fraunhofer HHI (see map on page15)

By bus

From Berlin Central Station (Hbf):

Take Bus 245 (direction 'S+U-Bf. Zoologischer Garten') to the stop 'Marchbrücke'. The 'Forum Digitale Technologien' is approx. 350 metres from the bus stop.

By Public Transport:

By S-Bahn (Suburban train)

Take line S5, S7, S75 or S9 to station 'Berlin Zoologischer Garten', then take bus 245 (direction / 'S-Bf. Nordbahnhof') to bus stop 'Marchbrücke'. The 'Forum Digitale Technologien' is approx. 350 metres from the bus stop.

Take Line S5, S7, S75 or S9 to station 'Tiergarten', walk alongside 'Straße des 17. Juni' in direction 'Ernst-Reuter-Platz' (westward) for approx. 350 m. Then turn right before the channel bridge to 'Salzufer' (approx. 15 minutes).

By U-Bahn (Underground)

Take Line U2 to station 'Ernst-Reuter-Platz', then either walk from Ernst-Reuter-Platz alongside 'Marchstraße' and turn right to 'Salzufer' (approx. 15 minutes) or take bus 245 (direction 'S-Bf. Nordbahnhof') from 'Ernst-Reuter-Platz' to the 'Marchbrücke' stop. The 'Forum Digitale Technologien' is approx. 350 metres from the bus stop.

By Car

We do not recommend travelling by car due to the poor parking situation.

Motorway A 115 (AVUS) coming from Hanover, Leipzig, Nuremberg or A 100 to exit 'Charlottenburg, Spandauer Damm' direction city center ('Zentrum'), continue straight ahead on 'Otto-Suhr-Allee' to the roundabout 'Ernst-Reuter-Platz', then turn into 'Marchstraße'. Again, turn right at the corner of 'Salzufer'.

Conference dinner

Joint dinner on May 20th, 2025, at 19:00:
at Paulaner in the Spreebogen
Alt-Moabit 98, 10559 Berlin

Registration

Potential participants are friendly asked to register by **April 29th, 2025**. Use the following link:
www.vde.com/pn

For registrations **later than April 30th, 2025** a supplementary fee will be charged.

On-site registration will also be possible.

The registration is performed and organised by VDE Konferenz-Service. For any questions please refer to:

VDE Konferenz-Service
Merianstraße 28
63069 Offenbach
Phone: +49 69 6308 275
Fax: +49 69 6308 144
vde-conferences@vde.com

Registration fee

Registration includes complimentary coffee, lunch and conference dinner on May 20th. A link to the electronic abstracts will be provided at the conference.

General Informations

Conference fees

	Early bird until 04/29/2025	Regular price from 04/30/2025
Regular	€ 320,00	€ 400,00
Personal VDE/IEEE members*	€ 220,00	€ 340,00
Presenters	€ 220,00	€ 340,00
PHD Students	€ 120,00	€ 180,00
Students* ** *** Non VDE member	€ 50,00	€ 100,00
Students with VDE membership* **	free	free
Only conference dinner for accompanying person	€ 65,00	€ 65,00

* Reduction only possible after sending a copy of the membership card or student ID.

** only applicable for Bachelor's or Master's students

*** Free registration when VDE membership will be started immediately.

Payment procedure

Please transfer the fee to the given account after you received the invoice. Indicate the participant's name and the invoice number on the bank transfer. You can also pay by credit card. Then indicate your credit-card information on the registration form.

Please note: The online reservation is only valid after successful money transfer.

Cancellation

For cancellations until April 29th, 2025 the conference fee will be refunded except for 30,00 EUR administrative costs. Cancellations after May 5th, 2025 cannot be refunded at all.

