

# OWTNM

# 2018

## XXVI International Workshop on Optical Wave & Waveguide Theory and Numerical Modelling

Bad Sassendorf, Germany, April 13–14, 2018

Thursday, April 12, 2018

19:00–21:00 Welcome reception & early registration

Friday, April 13, 2018

08:00–16:00 Registration

08:55	Welcome address
09:00–10:15	O-1: Functional devices
	Coffee break
10:45–12:00	O-2: Quantum optics / active devices
	Lunch
13:00–14:30	O-3: Numerical methods
	Coffee break
15:00–16:30	O-4: Waveguide theory
	Drinks
16:30–18:30	Poster session
19:00	Workshop dinner

Saturday, April 14, 2018

08:30–10:00 Registration

09:00–10:15	O-5: Plasmonics
	Coffee break
10:45–12:00	O-6: Nonlinear photonics
	Lunch
13:00–14:30	O-7: Biosensing and metamaterials
	Coffee break
15:00–16:15	O-8: Functional (nano-) photonics
16:15	Closing remarks

Friday 09:00–10:15, O-1: Functional devices

09:00–09:30	O-1.1	D.N. Chigrin (invited), <i>Multiphysics simulations in nanophotonics</i>
09:30–09:45	O-1.2	L. Ebers, M. Hammer, J. Förstner, <i>Slab waveguide steps with rounded corners at oblique incidence</i>
09:45–10:00	O-1.3	N. Dhingra, J.C. Song, G.J. Saxena, E.K. Sharma, B.M.A. Rahman, <i>Germanium Telluride Phase Change Material based 1×2 Electro-Optic Switch</i>
10:00–10:15	O-1.4	A.E. Kaplan, A. Parini, G. Bellanca, P. Bassi, S. Trillo, <i>A Compact Wavelength Router Dynamically Reconfigurable through Destructive Interference</i>

Friday 10:45–12:00, O-2: Quantum optics / active devices

10:45–11:15	O-2.1	J. Münzberg, A. Vetter, F. Beutel, W. Hartmann, S. Ferrari, W. Pernice, C. Rockstuhl (invited), <i>Design of integrated quantum optical single-photon detectors</i>
11:15–11:30	O-2.2	P.-I. Schneider, L. Zschiedrich, X. Garcia-Santiago, S. Burger, <i>Optimization of quantum optical devices with machine learning</i>
11:30–11:45	O-2.3	F. Spallek, A. Buchleitner, T. Wellens, <i>Upconversion in optimized photonic multilayer structures</i>
11:45–12:00	O-2.4	H. Lüder, M. Gerken, <i>FDTD modelling of nanostructured OLEDs: analysis of simulation parameters for accurate radiation patterns</i>

Friday 13:00–14:30, O-3: Numerical methods

13:00–13:30	O-3.1	N. Gregersen, J. R. de Lasson, L. H. Frandsen, O.S. Kim, Ö. Breinbjerg, F. Wang, O. Sigmund, A. Ivinskaya, A. Lavrinenko, P. Gutsche, S. Burger, T. Häyrynen, J. Mørk (invited), <i>Benchmarking state-of-the-art optical simulation methods for analyzing large nanophotonic structures</i>
13:30–13:45	O-3.2	G. Granet, <i>Multidomain spectral method for optical-waveguide analysis</i>
13:45–14:00	O-3.3	H. Kleene, D. Schulz, <i>An Assessment of Faber Polynomial Expansions for the Time Domain Solution of Maxwell's equations</i>
14:00–14:15	O-3.4	M.M.R. Elsawy, G. Renversez, <i>Vector solver for 2D highly nonlinear plasmonic waveguides: a rigorous analysis</i>
14:15–14:30	O-3.5	R. Kumar, A. Sharma, <i>Analysis of Absorption in the Absorbing Boundary Condition</i>

Friday 15:00–16:30, O-4: Waveguide theory

15:00–15:30	O-4.1	S. Phang, A. Vukovic, F. Fotsa-Ngaffo, G. Gradoni, S.C. Creagh, P.D. Sewell, T. Benson (invited), <i>Non-Hermitian Photonics from Parity-Time Symmetry to Pseudo-Hermitian Structures</i>
15:30–15:45	O-4.2	L. Cahill, <i>Field Solutions for Large Area Graded-Index Waveguides</i>
15:45–16:00	O-4.3	P. Kwiecien, I. Richter, V. Kuzmiak, J. Čtyroký, <i>Magneto-optic Rigorous Coupled Wave Analysis – numerical investigation of nonreciprocal waveguiding structures</i>
16:00–16:15	O-4.4	A.-L. Fehrembach, B. Gralak, A. Sentenac, <i>Vectorial semi-analytical model for Fano resonances in guided mode resonance gratings</i>
16:15–16:30	O-4.5	L. Yuan, Y.Y. Lu, <i>Bound States in the Continuum Surrounded by Ultra-strong Resonances</i>

Friday, 16:30–18:30: Poster session

P-01	D. Pereira-Martín, A. Sánchez-Postigo, A. Hadij-Elhouati, D.-X. Xu, P. Cheben, R. Halir, Í. Molina-Fernández, A. Ortega-Moñux, J.G. Wangüemert-Pérez, <i>Automatic design of high-performance fiber-chip surface grating couplers based on Floquet-Bloch mode analysis</i>
P-02	G. Demésy, G. Renversez, <i>Full-vector finite element 3D model for waveguide-based plasmonic sensors</i>
P-03	A.A. Shcherbakov, T. Kämpfe, Y. Jourlin, <i>Simulation of luminescence in periodically structured layers based on direct S-matrix calculation</i>
P-04	A.A. Shcherbakov, <i>Using spline interpolation for grating geometry description within the curvilinear coordinate Generalized Source Method</i>
P-05	T. Aso, T. Ishiguro, J. Yamauchi, H. Nakano, <i>Reduction in Bend Loss of a Si-wire Waveguide by Adjusting the Core Location</i>
P-06	J. Yamauchi, Y. Nakagawa, T. Tsuchiya, H. Nakano, <i>A Polarization Converter Consisting of a Bent Si-wire Waveguide</i>
P-07	J. Yamauchi, N. Takahashi, H. Ito, H. Nakano, <i>Polarization-dependent and -independent Absorbers with a Periodic Metal Grating</i>
P-08	J. Yamauchi, K. Shimada, R. Ando, H. Nakano, <i>Effectiveness of a Curvilinear Taper in Waveguide Applications</i>
P-09	J. Yamauchi, R. Nakada, H. Nakano, <i>Study of a Quarter-wave Plate Using an Array of Cross-shaped Apertures in a Metallic Plate</i>
P-10	J. Yamauchi, Y. Tanaka, S. Yoshino, H. Nakano, <i>Study of Perforated Metal Sheets Based on Square and Rectangular Lattices</i>
P-11	J. Yamauchi, T. Okawachi, D. Shimamura, H. Nakano, <i>Orthogonal Polarization Rotator for Arbitrary Incidence Plane of Polarization</i>



**Friday, 16:30 – 18:30: Poster session**

P-12	S.F. Helfert, J. Jahns, <i>Application of the Talbot-effect to the structured illumination of hollow waveguide arrays: numerical simulations</i>
P-13	V. Burdin, A. Bourdine, <i>A System of Nonlinear Characteristic Equations for Two-Mode Propagation in Step-Index Optical Fiber</i>
P-14	A. Bourdine, V. Burdin, <i>Simulation and Research of Few-Mode Optical Fiber DMD Degradation due to Geometry Deviation From Optimized Form</i>
P-15	A. Waqas, D. Melati, A. Melloni, <i>Polynomial chaos based stochastic augmented building block for process design kits</i>
P-16	S. Sunder, A. Sharma, <i>Evolution of Modes in Photonic Lanterns</i>
P-17	M. Hammer, L. Ebers, J. Förstner, <i>Oblique quasi-lossless excitation of a thin silicon slab waveguide</i>
P-18	P. Pareek, N. Malviya, V. Palodiya, <i>Steady State Analysis of SiGeSn/GeSn Interband MQWIP</i>
P-19	A. Abdrabou, Y.Y. Lu, <i>Families of Exceptional Points in Period Slabs</i>
P-20	M. Balasubrahmaniam, A. Nahata, S. Mujumdar, <i>Anderson Localization in 1D plasmonic terahertz waveguides</i>
P-21	C. Spenner, H. Kleene, P. Sarapukdee, K. Kallis, D. Schulz, <i>Analysis of SiO<sub>2</sub>- and MgF<sub>2</sub>-Based Surface Plasmon Resonance Sensors</i>
P-22	F. Binkowski, L. Zschiedrich, S. Burger, <i>Analysis of light-matter interaction of optical sources with dispersive nanoresonators via contour integration</i>
P-23	M.H. Muhammad, K.R. Mahmoud, M.F.O. Hameed, S.S.A. Obayya, <i>Optimization of Random Grating Thin Film Solar Cell</i>
P-24	A.H.K. Mahmoud, M.F.O. Hameed, M. Hussein, S.S.A. Obayya, <i>Highly efficient light trapping design for thin film solar cell</i>
P-25	Y. Abd El Hak, A.M.A. Said, S.S.A. Obayya, <i>Blocked Schur for Optical Discontinuity Analysis in Cylindrical Coordinates</i>
P-26	K.S.R. Atia, A.M. Heikal, S.S.A. Obayya, <i>Mass Redistributed Finite Element Time Domain Beam Propagation Method for Photonic Devices</i>
P-27	J.A.H. Odoeze, M.F.O. Hameed, H.M.H. Shalabyz, S.S.A. Obayya, <i>Novel Design of Photonic Crystal Fiber TE-Pass Polarizer</i>

**Saturday 09:00 – 10:15, O-5: Plasmonics**

09:00 – 09:30	O-5.1	A. Trügler (invited), <i>Plasmon and phonon polariton mapping in an electron microscope</i>
09:30 – 09:45	O-5.2	M. Burda, P. Kwiecien, I. Richter, <i>Nonlocal resonant behavior in plasmonic nanostructures: analytical and numerical approaches</i>
09:45 – 10:00	O-5.3	V. Myroshnychenko, N. Nishio, F.J. García de Abajo, J. Förstner, N. Yamamoto, <i>Nanoscale Imaging of Plasmon Modes of Metal Nanoparticles by Cathodoluminescence Spectroscopy</i>
10:00 – 10:15	O-5.4	T. Weiss, E.A. Muljarov, <i>On the mechanisms of plasmon-enhanced chiroptical response</i>

**Saturday 10:45 – 12:00, O-6: Nonlinear Photonics**

10:45 – 11:15	O-6.1	K. Busch (invited), <i>Atom-Surface Interaction: Theory and Computations</i>
11:15 – 11:30	O-6.2	W. Spiller, <i>The numerical investigation of colliding optical solitons as an all-optical-Gate using the Method of Lines (MoL)</i>
11:30 – 11:45	O-6.3	V. Jandieri, R. Khomeriki, D. Erni, W.C. Chew, <i>All-Optical Digital Amplification in Nonlinear Photonic Crystal Waveguides</i>
11:45 – 12:00	O-6.4	I. Allayarov, S. Upendar, M.A. Schmidt, T. Weiss, <i>A New Definition for the Kerr Nonlinearity Parameter</i>

**Saturday 13:00 – 14:30, O-7: Biosensing and metamaterials**

13:00 – 13:30	O-7.1	F. Michelotti (invited), <i>Theory and concepts for all-dielectric biosensing</i>
13:30 – 13:45	O-7.2	M.Y. Azab, M.F.O. Hameed, A.M. Nasr, S.S.A. Obayya, <i>Multifunctional Plasmonic Photonic Crystal Fiber Biosensor</i>
13:45 – 14:00	O-7.3	T. Repän, A. Novitsky, M. Willatzen, A. Lavrinenko, <i>Reversed phase propagation for hyperbolic surface waves</i>
14:00 – 14:15	O-7.4	S.A. Hack, J.J.W. van der Vegt, W.L. Vos, <i>"Cartesian" light: Unconventional propagation of light in a 3D crystal of bandgap cavities</i>
14:15 – 14:30	O-7.5	J. Čtyroký, P. Kwiecien, I. Richter, J.H. Schmid, J. Gonzalo Wangüemert-Pérez, Í. Molina-Fernández, A. Ortega-Moñux, P. Cheben, J. Litvik, M. Dado, <i>Design of Apodized and Chirped Bragg Gratings in Subwavelength Grating Metamaterial Waveguides</i>

**Saturday 15:00 – 16:15, O-8: Functional (nano-) photonics**

15:00 – 15:30	O-8.1	J. García de Abajo (invited), <i>Quantum Physics with Plasmons in Graphene and other Atomic-Scale Systems</i>
15:30 – 15:45	O-8.2	D.S. Kumar, S.C. Creagh, S. Sujecki, T.M. Benson, <i>Modelling capture of pump power in the core using deformed step index fibre</i>
15:45 – 16:00	O-8.3	F. Negrodo, M. Blaicher, A. Nestic, P. Kraft, J. Ott, W. Döfler, C. Koos, C. Rockstuhl, <i>Efficient Optimization of the Trajectory of Photonic Wire Bonds</i>
16:00 – 16:15	O-8.4	M.V. Cojocari, A.A. Basharin, <i>Spatial separation of electric and magnetic field in toroidal metamaterial</i>