

Dr. David A.I. Marpaung

CONTACT INFORMATION

University of Twente
Laser Physics and Nonlinear Optics (LPNO)
Science and Technology Faculty (TNW)
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RESEARCH INTERESTS

Integrated optical signal processing and nonlinear optics: integrated optical circuits, RF and microwave photonics, optomechanics and Brillouin scattering, programmable photonics, photon-phonon interactions, optical frequency combs, silicon photonics

CURRENT ACADEMIC POSITION

Associate Professor, University of Twente, the Netherlands January 2018 to present
Group leader of Nonlinear Nanophotonics
Science and Technology Faculty (TNW)

- Affiliations:
 - Laser Physics and Nonlinear Optics (LPNO)
 - MESA+ Institute for Nanotechnology
 - Applied Nanophotonics (ANP) research cluster

PREVIOUS ACADEMIC POSITIONS

Senior Research Fellow, University of Sydney, Australia January 2015 to December 2017
School of Physics

- Affiliations:
 - Centre for Ultrahigh Bandwidth Devices for Optical Systems (CUDOS)
 - Institute of Photonics and Optical Science
 - The University of Sydney Nano Institute

Research Fellow, University of Sydney, Australia August 2012 to December 2014
School of Physics

- Supervisor: Professor Benjamin J. Eggleton
- On-chip Brillouin scattering for microwave photonic signal processing

Postdoctoral Fellow, University of Twente, the Netherlands September 2009 to July 2012
Telecommunication Engineering group
Faculty of Electrical Engineering, Mathematics, and Computer Science (EWI)

- EU FP7 Large Integrating project SANDRA
- Integrated Optical Beamforming for Satellite Communications
 - Supervisor: Dr. Chris G. H. Roeloffzen

EDUCATION

University of Twente, the Netherlands,
Ph.D., Electrical Engineering, March 2005- August 2009

- Thesis: *High Dynamic Range Analog Photonic Link: Design and Implementation*
- Promotor: Professor Wim van Etten
- Co-promotor: Dr. Chris Roeloffzen
- Four months internship at Netherlands Institute for Radio Astronomy (ASTRON)

M.Sc., Applied Physics, August 2002-November 2003

- Thesis: *Adiabatic Excitations of Slow Light Devices*
- Advisor: Dr. Hugo J.W.M. Hoekstra

Institut Teknologi Bandung (ITB), Indonesia,

B.Sc., Physics, August 1998 - March 2002

- *Cum Laude*, top of the class, GPA: 3.78/4.00
- Thesis: Effective Index Method for Rectangular Optical Waveguides
- Advisors: Dr. Alexander Iskandar and Prof. M.O. Tjia

GRANTS

- [1] Principal Investigator, “Light and Sound-based Signal Processing in Silicon Nitride”, **NWO VIDI fellowship**, EUR 800,000, 2018 to 2022.
- [2] Co-Principal Investigator, “Integration of Broadband Microwave Photonic Frequency Converters”, **ARC Linkage grant**, AUD 540,000, 2018 to 2021.
- [3] Co-Principal Investigator, “Multiband Tunable RF Photonic Filter”, **Lockheed-Martin Co. research contract**, USD 230,000, 2017 to 2019.
- [4] Principal Investigator, “Smart Radio-Frequency Filter in a Tuneable Optical Circuit”, **ARC Discovery Early Career Researcher Award (DECRA)**, AUD 357,000, 2015 to 2017.
- [5] Co-Principal Investigator, “Harnessing Giant Brillouin Gain for Advanced Integrated Microwave Signal Processing”, **Asian Office of Aerospace Research and Development (AOARD) - US Air Force Research Support**, USD 100,000, 2016 to 2018.
- [6] Principal Investigator, “Ultra-portable and Programmable Microwave Photonic Filter”, **Commercial Development and Industry Partnerships (CDIP) award - University of Sydney**, AUD 35,000, 2016 to 2017.
- [7] Co-Principal Investigator, “Ultra-fast Optoelectronics Characterisation for Optical and Wireless Systems”, **ARC Linkage, Infrastructure, Equipment, and Facilities (LIEF)**, AUD 420,000, 2016 to 2017.
- [8] Co-Principal Investigator, “Nanophotonics Integration System”, **University of Sydney, Faculty of Science Research Equipment and Infrastructure Scheme**, AUD 40,000, 2016 to 2017.
- [9] Co-Principal Investigator, “Frequency Agile Microwave Photonic Filter in a Photonic Chip”, **Asian Office of Aerospace Research and Development (AOARD) - US Air Force Research Support**, USD 90,000, 2014 to 2016.

AWARDS AND SCHOLARSHIPS

- [1] 2016 **CUDOS commercialization prize - University of Sydney** AUD 3,000
- [2] 2002-2003 **University of Twente scholarship** EUR 12,000

TEACHING EXPERIENCE

University of Twente, the Netherlands,

Lecturer

May 2018 to present

- 2017-201500502-2B Signal Processing and Communications
 - Second-year bachelor’s course Electrical Engineering
 - Guest lecturer (three lectures) on the subject Random Signals and Noise

Tutorial instructor

April 2018 to present

- 2017-201400535-2B Fields and Electromagnetism
 - Undergraduate course for mathematics students
 - Main instructor: Dr. Herman Offerhaus

Student project advisor

April 2018

- 2017-191440201-2A: Technical Optics
 - Undergraduate course in applied physics
 - Main instructor: Prof. Klaus Boller and Prof. Pepijn Pinkse
 - Project: “Surface plasmon sub-wavelength optics”

University of Sydney, Australia,

Lecturer

2016 to 2017

- PHYS 1002 Waves and Oscillations
 - First year physics undergraduate course
 - Co-lecturer: Dr. Sergio Leon-Saval

Tutorial supervisor

2015 to 2017

- PHYS 1001 Fundamentals of Physics
 - Led three teams of tutors to provide tutorial sessions to 120 first-year students

University of Twente, the Netherlands,

Lecturer

2011 to 2012

- 191211020: Optical Fibre Communication
 - Elective master course in Electrical Engineering
 - Co-lecturer: Dr. Chris Roeloffzen

Tutorial assistant

2005 to 2009

- Random Signals and Noise
 - Undergraduate course in Electrical Engineering
 - Main instructor: Prof. Wim van Etten

SUPERVISION AND MENTORING Postdoctoral Scholars

- **Dr. Amol Choudhary**, University of Sydney, Australia, 2016-2017
Co-advised by: Prof. Benjamin J. Eggleton
- **Dr. Elias Giacomidis**, University of Sydney, Australia, 2016–2017
Co-advised by: Prof. Benjamin J. Eggleton
- **Dr. Alvaro Casas-Bedoya**, University of Sydney, Australia, 2015–2016
Co-advised by: Prof. Benjamin J. Eggleton

PhD Students

- **Roel Botter**, University of Twente, from 1 January 2019
Project: Stimulated Brillouin scattering in silicon nitride
- **Okky Daulay**, University of Twente, from 1 January 2019
Project: Integrated Brillouin signal processor
- **Yang Liu**, University of Sydney, Australia, 2015–present
Thesis: On-chip signal processing based on linear optics and nonlinear stimulated Brillouin scattering
Co-advised by: Prof. Benjamin J. Eggleton

- **Iman Aryanfar**, University of Sydney, Australia, 2015–2018
Thesis: Tailoring the phase and amplitude of optical signals using large Brillouin gain in photonic integrated circuits
Co-advised by: Prof. Benjamin J. Eggleton
- **Blair Morrison**, University of Sydney, Australia, 2013–2018
Thesis: Stimulated Brillouin scattering in integrated circuits: platforms and applications
Co-advised by: Prof. Benjamin J. Eggleton
- **Mattia Pagani**, University of Sydney, Australia, 2013-2016
Thesis: Microwave photonic signal processing using on-chip nonlinear optics
Co-advised by: Prof. Benjamin J. Eggleton
- **Maurizio Burla**, University of Twente, the Netherlands, 2009–2013
Thesis: Advanced integrated optical beam forming networks for broadband phased array antenna systems
Co-advised by: Prof. Wim van Etten and Dr. Chris Roeloffzen
- **Mohammad Rezaul Hoquekhan**, University of Twente, the Netherlands, 2009–2013
Thesis: Low-phase noise microwave photonic signal generation
Co-advised by: Prof. Wim van Etten and Dr. Chris Roeloffzen

Master and Honours Students

- **Ryan Thomas**, Honours, University of Sydney, Australia, 2016–2017
Thesis: Programmable photonic integrated circuit in silicon nitride
- **El-Abed Haidar**, Honours, University of Sydney, Australia, 2014-2015
Thesis: Enhancing four-wave mixing process using stimulated Brillouin scattering
Co-advised by: Prof. Benjamin J. Eggleton
- **Roelof Bernardus Times**, M.Sc., University of Twente, the Netherlands, 2008–2009
Thesis: Photonic circuit design for RF photonic frequency discrimination
Co-advised by: Dr. Chris Roeloffzen
- **Roland Meijerink**, M.Sc., University of Twente, the Netherlands, 2007–2008
Thesis: Design of a novel phase array antenna receive system
Co-advised by: Dr. Chris Roeloffzen and Dr. Arjan Meijerink

Research Assistants

- **Jason Hotten**, University of Sydney, Australia, 2016–2017
Project: Large-scale programmable nanophotonic processor
- **Shayan Shahnia**, University of Sydney, Australia, 2014–2016
Project: Prototype development of a programmable microwave photonic filter

Internship Students

- **Hengyun Jiang**, Visiting PhD student, University of Sydney, Australia, 2014–2015
Project: Integrated microwave photonic signal processing
Co-advised by: Prof. Benjamin J. Eggleton
- **Kang Tan**, Visiting MSc student, University of Sydney, Australia, 2012–2013
Project: Ultra-wideband signal generation in a chalcogenide photonic chip
Co-advised by: Prof. Benjamin J. Eggleton
- **Ludovic Chevalier**, Visiting MSc student, University of Twente, the Netherlands, 2011
Thesis: Ultra-wideband pulse shaping in a silicon nitride photonic chip

PROFESSIONAL SERVICE

Committee Service

- Technical program committee (TPC) co-chair IEEE Topical meeting of Microwave Photonics 2018, Toulouse, France
- TPC member CLEO Pacific Rim 2018, Hong Kong
- TPC member IEEE Topical meeting on microwave photonics 2016, Long Beach, CA
- TPC member Asia Communications and Photonics Conference (ACP), Wuhan, China
- Steering committee member Workshop on Optomechanics and Brillouin Scattering: Fundamentals, Applications and Technologies (WOMBAT), Sydney 2015, Besancon 2017, Tel-Aviv 2019
- Organizing committee member Institute of Photonics and Optical Science (IPOS) symposium "Imaging Spectroscopy", 2014, Sydney, Australia

Editorial Service

- *IEEE Journal of Selected Topics in Quantum Electronics (JSTQE)*, Primary Guest Editor for the special issue "Programmable Photonics" (2018)
- *MDPI Applied Sciences*, Guest Editor for the special issue "Photonic Integration: Recent Advances and Applications" (2018)

Conference Organization

- Lead organizer of the special symposium "Recent Advances in Integrated Microwave Photonics" in CLEO 2018, San Jose, CA
- Co-organizer (with Maurizio Burla) of the symposium "Microwave Photonics for Wireless Spectrum Management" at Progress in Electromagnetics Research Symposium (PIERS) 2015, Prague, Czech Republic
- Co-organizer (with Hiroshi Murata) of the symposium "Integrated Microwave Photonics" at Progress in Electromagnetics Research Symposium (PIERS) 2014, Guangzhou, China

Referee Service

- Referee for journals: *Science*, *Nature Photonics*, *Laser and Photonics Reviews*, *Optica*, *Scientific Reports*, *Light: Science & Applications*, *IEEE Journal of Selected Topics in Quantum Electronics*, *Optics Letters*, *Optics Express*, *APL Photonics*, *Applied Optics*, *IEEE Photonics Journal*, *IEEE Photonics Technology Letters*, *IEEE/OSA Journal of Lightwave Technology*, *IEEE Trans. Microwave Theory Tech.*, *Optics Communications*
- Reviewer for grants:
 - ERC Consolidator Grant (ERC CoG)
 - EPSRC New Investigator Award
 - Marie Skłodowska Curie Fellowships
 - Australian Research Council (ARC) Discovery and LIEF programs
 - Natural Sciences and Engineering Research Council of Canada Discovery project
 - Israel Science Foundation grant

- External thesis examiner:
 - D. Perez, "Integrated Microwave Photonic Processors using Waveguide Mesh Cores", PhD thesis, Universida Politecnica de Valencia, Spain, 2018
 - S. Levy, "Stimulated Brillouin Scattering in a Planar Chalcogenide Glass Waveguide", PhD thesis, Bar Ilan University, Israel, 2016

Other Service

- Traveling Lecturer for The Optical Society (OSA).
Role: delivering invited lectures to the OSA Student Chapters

PUBLICATION RECORD

- Web of Science, Number of publications: 105, Total citations: 1509, h-index: 21
- Scopus, Number of publications: 153, total citations: 2146, h-index: 25
- Google Scholar, Number of publications: 175, total citations: 2590, h-index: 27

REFEREED JOURNAL PUBLICATIONS

- [1] **D. Marpaung**, J. Yao, and J. Capmany, "New opportunities for integrated microwave photonics ", *Nature Photonics* (under revision, 2018).
- [2] C. Lacava, X. Zhang, T. Tanabe, J. Roy, X. Hu, J. Andrasson, J. Capmany, L. Oxenloewe, **D. Marpaung**, C. Sophie-Bres, S. Ramachandran, A. Willner, G. Constestabile, M. Sorel, M. Strain, Z. Liu, J. Wrachtrup, T. Calarco, B. Eggleton, P. Grangier, B. Munro, C. Soci, S. Eaton, and P. Minzoni "Roadmap on all-optical processing" section: Microwave photonic signal processing, *Journal of Optics* (under review, 2018)
- [3] E. Giacomidis, A. Choudhary, E. Magi, **D. Marpaung**, K. Vu, P. Ma, D.-Y. Choi, S. Madden, B. Corcoran, M. Pelusi, and B.J. Eggleton "Chip-based Brillouin processing for carrier recovery in coherent optical communications", *Optica* (accepted, 2018)
- [4] A. Choudhary, Y. Liu, **D. Marpaung**, and B. J. Eggleton, "On-chip Brillouin filtering of RF and Optical Signals", *IEEE Journal of Selected Topics in Quantum Electronics* (accepted, 2018).
- [5] A. Mahendra, E. Magi, A. Choudhary, Y. Liu, **D. Marpaung**, and B.J. Eggleton, "High Performance, Low Noise Figure Brillouin-based Tunable Bandpass Microwave Photonic Filter", *JJ. Lightwave Technol.* (under review, 2018).
- [6] Y. Liu, , A. Choudhary, **D. Marpaung**, and B. J. Eggleton, "Chip-based Brillouin Processing for Phase Control of RF Signals", *IEEE Journal of Quantum Electronics* (accepted, 2018).
- [7] H. Y. Jiang, L.S. Yan, and **D. Marpaung** "Chip-based arbitrary radio-frequency photonic filter with algorithm-driven reconfigurable resolution", *Optics Letters* 43, 418 (2018)
- [8] C. Roeloffzen, M. Hoekman, E. J. Klein, L. S. Wevers, R.B.Timens, D. Marchenko, D. Geskus, R. Dekker, A. Alippi, R. Grootjans, A. van Rees, R. M Oldenbeuving, J. P. Epping, R. G Heideman, K. WÄurhoff, A. Leinse, D. Geuzebroek, E. Schreuder, P.W.L. van Dijk, I. Visscher, C. Taddei, Y. Fan, C.Taballione, Y. Liu, **D. Marpaung**, L. Zhuang, M. Benelajla, K-J Boller "Low-Loss Si₃N₄ TriPleX Optical Waveguides: Technology and Applications Overview", *IEEE Journal of Selected Topics in Quantum Electronics* 24, 4 (2018)
- [9] A. Choudhary, M. Pelusi, **D. Marpaung** T. Inoue, K. Vu, P. Ma, D.-Y. Choi, S. Madden, S. Namiki, and B.J. Eggleton "On-chip Brillouin purification for frequency comb-based coherent optical communications", *Optics Letters* 42, 5074 (2017)

- [10] Y. Liu, A. Choudhary, J. Hotten, B. J. Eggleton, and **D. Marpaung** "All-optimized integrated RF photonic notch filter", *Optics Letters* 42, no. 22, p. 4631, (2017).
- [11] B. Morrison, A. Casas-Bedoya, Y. Liu, A. Zarifi, G. Ren, T. Nguyen, K. Vu, D.Y. Choi, **D. Marpaung**, S. J. Madden, A. Mitchell, and B. J. Eggleton "Compact Brillouin devices through hybrid integration on Silicon", *Optica* 4, 847 (2017)
- [12] A. Choudhary, Y. Liu, B. Morrison, K. Vu, D.-Y. Choi, P. Ma, S. Madden, **D. Marpaung**, and B. J. Eggleton, " High-resolution, on-chip RF photonic signal processor using Brillouin gain shaping and RF interference ", *Scientific Reports* 7(1)(2017)
- [13] M. Pelusi, A. Choudhary, T. Inoue, B. J. Eggleton, **D. Marpaung**, and S. Namiki , " Frequency comb noise squeezer by a Brillouin comb amplifier for phase sensitive communications", *Optics Express* 25, 17847 (2017)
- [14] Y. Liu, A. Choudhary, **D. Marpaung**, and B. J. Eggleton "Gigahertz optical tuning of an on-chip RF photonic delay line", *Optica* 4, 418 (2017)
- [15] B. A. Bell, C. Xiong, **D. Marpaung**, C. K. McKinstrie, and B. J. Eggleton "Uni-directional four-wave mixing Bragg scattering in a silicon waveguide using cross-polarized pumps", *Optics Letters* 42,1668 (2017)
- [16] I. Aryanfar, **D. Marpaung**, A. Choudhary, Y. Liu, K. Vu, D. Y. Choi, P. Ma, S. J. Madden, and B. J. Eggleton "Chip-based Brillouin RF photonic phase shifter and wideband time delay", *Optics Letters* 42, 1313 (2017)
- [17] A. Choudhary, B. Morrison, I. Aryanfar, S. Shahnian, M. Pagani, Y. Liu, K. Vu, S. J. Madden, **D. Marpaung**, and B. J. Eggleton "Advanced integrated microwave photonic signal processing with giant on-chip Brillouin gain", *J. Lightwave Technol* (2016)
- [18] Y. Liu, **D. Marpaung**, A. Choudhary, and B. J. Eggleton "A lossless and high resolution RF photonic filter", *Optics Letters* 41(22) (2016)
- [19] B. Morrison, Y. Zhang, M. Pagani, B. J. Eggleton, and **D. Marpaung** "Four wave mixing and nonlinear losses in thick silicon waveguides", *Optics Letters* 41,2418 (2016)
- [20] I. Aryanfar, A. Choudhary, S. Shahnian, M. Pagani, Y. Liu, K. Vu, S. J. Madden, B. Luther-Davies, **D. Marpaung**, and B. J. Eggleton "Signal interference stimulated Brillouin scattering RF photonic bandstop filter", *Optics Express* 24, 14995 (2016)
- [21] H. Y. Jiang, **D. Marpaung**, M. Pagani, K. Vhu, D.Y. Choi, S. Madden, L. S. Yan, and B. J. Eggleton, " High resolution, multiple frequencies microwave measurement using an on-chip tunable Brillouin RF photonic filter", *Optica* 3, 30 (2016)
- [22] M. Merklein, A. Casas-Bedoya, **D. Marpaung**, T.F.S. Buettner, M. Pagani, B. Morrison, I.V. Kabakova, and B. J. Eggleton, " Stimulated Brillouin scattering in photonic integrated circuits: novel applications and devices", *IEEE Journal of Selected Topics in Quantum Electronics* (2016) invited paper
- [23] A. Choudhary, I. Aryanfar, S. Shahnian, B. Morrison, K. Vu, S. Madden, B. Luther-Davies, **D. Marpaung**, and B. J. Eggleton, " Tailoring of the Brillouin gain for on-chip widely tunable and reconfigurable broadband microwave photonic filters", *Optics Letters* 41,436 (2016)
- [24] **D. Marpaung**, B. Morrison, M. Pagani, D.-Y. Choi, B. Luther-Davies, S.J. Madden, and B.J. Eggleton, "Low power, chip-based stimulated Brillouin scattering microwave photonic filter with ultrahigh selectivity," *Optica* 2, 76 (2015)

- [25] M. Pagani, B. Morrison, Y. Zhang, A. Casas-Bedoya, T. Aalto, M. Harjanne, M. Kapulainen, B. J. Eggleton, and **D. Marpaung**, "Low-error and broadband microwave frequency measurement in a silicon chip", *Optica* 2, 751 (2015)
- [26] S. Shania, M. Pagani, B. Morrison, B. J. Eggleton, and **D. Marpaung**, "Independent manipulation of the phase and amplitude of optical sidebands in a highly-stable RF photonic filter", *Optics Express* 23, 2378 (2015)
- [27] C. Xiong, X. Zhang, A. Mahendra, J. He, D.Y. Choi, C.J. Chae, **D. Marpaung**, A. Leinse, R.G. Heideman, M. Hoekman, C.G.H. Roeloffzen, R.M. Oldenbeuving, P.W.L. van Dijk, C. Taddei, P. H. W. Leong, and B. J. Eggleton, "A compact and reconfigurable silicon nitride time-bin entanglement circuit", *Optica* 2, 724 (2015)
- [28] S. Iezekiel, M. Burla, J. Klamkin, **D. Marpaung**, and J. Capmany, "RF Engineering Meets Optoelectronics: Progress in Integrated Microwave Photonics", *IEEE Microwave Magazine* 16(8),28 - 45 (2015) invited paper
- [29] M. Pagani, K. Vhu, D.Y. Choi, S. Madden, B. J. Eggleton, and **D. Marpaung**, "Instantaneous microwave frequency measurement using four-wave mixing in a chalcogenide chip", *Optics Communications: special issue integrated microwave photonic signal processing* (2015) invited paper
- [30] A. Casas-Bedoya, B. Morrison, M. Pagani, **D. Marpaung**, and B. J. Eggleton, "Tunable narrowband microwave photonic filter created by stimulated Brillouin scattering from a Silicon nanowire", *Optics Letters* 40, 4154 (2015)
- [31] **D. Marpaung** and B. J. Eggleton, "Nonlinear integrated microwave photonic signal processing", *IEEE Photonics Society Newsletter* (July 2015) invited paper
- [32] I. Kabakova, **D. Marpaung**, C.G. Poulton, and B. J. Eggleton, "Harnessing on chip SBS", *Optics and Photonics News* 26, 34 (2015) invited paper
- [33] M. Pagani, **D. Marpaung**, D.-Y. Choi, S.J. Madden, B. Luther-Davies, and B.J. Eggleton, "Tunable wideband microwave photonic phase shifter using on-chip stimulated Brillouin scattering," *Optics Express* 22,28810 (2014)
- [34] M. Pagani, **D. Marpaung**, and B.J. Eggleton, "Ultra-wideband microwave photonic phase shifter with configurable amplitude response," *Optics Letters* 39,5854 (2014)
- [35] **D. Marpaung**, M. Pagani, B. Morrison, and B.J. Eggleton, "Nonlinear integrated microwave photonics", *Journal of Lightwave Technology* 32,3421 (2014) invited paper
- [36] M. Burla, **D. Marpaung**, L. Zhuang, M. R. H. Khan, A. Leinse, W.P. Beeker, M. Hoekman, R.G. Heideman, and C. Roeloffzen, "Multi-wavelength integrated optical beamformer based on wavelength division multiplexing and separate carrier tuning", *Journal of Lightwave Technology* 32,3509 (2014)
- [37] **D. Marpaung**, M. Pagani, B. Morrison, R. Pant, and B.J. Eggleton "Ultra-high suppression microwave photonic bandstop filters", *Chinese Science Bulletin* 59, 2684 (2014) invited paper
- [38] R. Pant, **D. Marpaung**, I.V. Kabakova, B. Morrison, C.G. Poulton, and B. J. Eggleton "On-chip stimulated Brillouin Scattering for microwave signal processing and generation", *Laser and Photonics Reviews* 8, 653 (2014)
- [39] B. Morrison, **D. Marpaung**, R. Pant, E. Li, D.Y. Choi, S. Madden, B. Luther-Davies, and B. J. Eggleton, "Tunable microwave photonic notch filter using on-chip stimulated Brillouin scattering", *Optics Communications*, 313,85 (2014)

- [40] **D. Marpaung**, B. Morrison, R. Pant, and B.J. Eggleton, "Frequency agile microwave photonic notch filter with anomalously high stopband rejection," *Optics Letters* 38, 4300 (2013).
- [41] **D. Marpaung**, B. Morrison, R. Pant, C. Roeloffzen, A. Leinse, M. Hoekman, R. Heideman, and B. J. Eggleton, " Si_3N_4 ring resonator-based microwave photonic notch filter with an ultrahigh peak rejection," *Optics Express* 21, 23286 (2013).
- [42] **D. Marpaung**, "On-chip photonic-assisted instantaneous microwave frequency measurement system", *IEEE Photonics Technology Letters* 25, 837 (2013).
- [43] C. G. H. Roeloffzen, L. Zhuang, C. Taddei, A. Leinse, R. G. Heideman, P. W. L. van Dijk, R. M. Oldenbeuving, **D. Marpaung**, M. Burla, and K. -J. Boller, "Silicon nitride microwave photonic circuits," *Optics Express* 21, 22937 (2013).
- [44] M. Burla, **D. Marpaung**, , L. Zhuang, A. Leinse, M. Hoekman, R.G. Heideman, and C. Roeloffzen, "Integrated photonic Ku-band beamformer chip with continuous amplitude and delay control", *IEEE Photonics Technology Letters*, 25, 1145, (2013)
- [45] K. Tan, **D. Marpaung**, R. Pant, F. Gao, E. Li, J. Wang, D.Y. Choi, S. Madden, B. Luther-Davies, J. Sun, and B. J. Eggleton, "Photonic-chip-based all-optical ultra-wideband pulse generation via XPM and birefringence in a chalcogenide waveguide", *Optics Express*, 21(2), (2013)
- [46] **D. Marpaung**, C. Roeloffzen, R. Heideman, A. Leinse, S. Sales and J. Capmany, "Integrated microwave photonics," *Laser and Photonics Reviews*, 7, 506, (2013).
- [47] M.R.H. Khan, E.H. Bernhardt, **D. Marpaung**, M. Burla, R.M. de Ridder, K. WÄrhhoff, M. Pollnau, and C. Roeloffzen, "Dual-Frequency Distributed Feedback Laser with an Optical Frequency Locked Loop for Stable Microwave Signal Generation," *IEEE Photonics Technology Letters* 24,1431, (2012).
- [48] M. Burla, C. Roeloffzen, L. Zhuang, **D. Marpaung**, D.H.P. Maat, K.F. Dijkstra, A. Leinse, M. Hoekman and R.G. Heideman, "System integration and radiation pattern measurement of a phased array antenna with photonic beamforming for radio astronomy applications", *Applied Optics*, 51(7), (2012).
- [49] **D. Marpaung**, L. Chevalier, M. Burla and C. Roeloffzen, "Impulse radio ultrawideband pulse shaper based on a programmable photonic chip temporal differentiator," *Optics Express*, 19(25), (2011).
- [50] L. Zhuang, **D. Marpaung**, M. Burla, W.P. Beeker, A. Leinse and C. Roeloffzen, "Low-loss, high-index-contrast $\text{Si}_3\text{N}_4/\text{SiO}_2$ optical waveguides for optical delay lines in microwave photonics signal processing," *Optics Express*, 19(23), (2011).
- [51] M. Burla, **D. Marpaung**, L. Zhuang, C. Roeloffzen, M.R. Khan, A. Leinse, M. Hoekman and R. Heideman, "On-chip CMOS compatible reconfigurable optical delay line with separate carrier tuning for microwave photonic signal processing," *Optics Express* 19(22), (2011). *Highlighted in Nature Photonics Technology Focus December 2011*
- [52] **D. Marpaung**, C. Roeloffzen, A. Leinse, and M. Hoekman, "A photonic chip based frequency discriminator for a high performance microwave photonic link," *Optics Express* 18(26), (2010). *Highlighted in Nature Photonics Technology Focus December 2011*
- [53] A. Meijerink, C. Roeloffzen, R. Meijerink, L. Zhuang, **D. Marpaung**, M.J. Bentum, M. Burla, J. Verpoorte, P. Jorna, A. Hulzinga, and W. van Etten, "Novel ring resonator-based integrated photonic beamformer for broadband phased array receive antennas - part I: design and performance analysis," *Journal of Lightwave Technology* 28, 3, (2010).

- [54] L. Zhuang, C. Roeloffzen, A. Meijerink, M. Burla, **D. Marpaung**, A. Leinse, M. Hoekman, R.G. Heideman, and W. van Etten, "Novel ring resonator-based integrated photonic beamformer for broadband phased array receive antennas - part II: experimental prototype," *Journal of Lightwave Technology* 28, 19, (2010).
- [55] **D. Marpaung**, C. Roeloffzen, and W. van Etten, "Enhanced dynamic range in a directly modulated analog photonic link," *IEEE Photonics Technology Letters*, 21, 810, (2009).
- [56] D. Yudistira, H.J.W.M. Hoekstra, M. Hammer, and **D. Marpaung**, "Slow light excitation in tapered 1D photonic crystals: theory," *Optical and Quantum Electronics* 38, 161-176, (2006).
- BOOK CHAPTERS
- [1] **D. Marpaung**, R. Pant and B.J. Eggleton, "Harnessing Nonlinear Optics for Microwave Signal Processing," in: All-optical Signal Processing for Data Communication and Storage Applications, Stefan Wabnitz and Benjamin J. Eggleton (Eds.), Springer, ISBN:978-3-319-14992-9 (2015)
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