

Dr. IVAN B. DJORDJEVIC
Professor of ECE & Optical Sciences
IEEE Fellow & OSA (Optica) Fellow
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CHRONOLOGY OF EDUCATION

Postdoctoral Institutions:

- University of Arizona, Tucson, USA, 12/2001-9/2002
- National Technical University of Athens, Athens, Greece, 4/2000-5/2001

8/1999	Ph.D.	Electrical Engineering University of Nis, Nis, Yugoslavia
2/1997	M.S.	Electrical Engineering University of Nis, Nis, Yugoslavia GPA: 10/10
11/1994	Dipl. Ing.	Electrical Engineering University of Nis, Nis, Yugoslavia Graduated with highest distinction (the Best Student of the University Award) GPA: 9.65/10 Majored in Electronics and Telecommunications

CHRONOLOGY OF EMPLOYMENT

8/17 –Present	Professor (Tenured) Department of Electrical and Computer Engineering University of Arizona, Tucson, AZ Joint Appointment with College of Optical Sciences University of Arizona, Tucson, AZ
8/12 –8/17	Associate Professor (Tenured) Department of Electrical and Computer Engineering University of Arizona, Tucson, AZ Joint Appointment with College of Optical Sciences University of Arizona, Tucson, AZ
1/13-12/16	Guest/Visiting Professor & TU Fellow Technische Universität Darmstadt, Darmstadt, Germany
7/06 – 8/12	Assistant Professor Department of Electrical and Computer Engineering, College of Engineering Joint Appointment with College of Optical Sciences University of Arizona, Tucson, AZ
1/04 – 7/06	Research Assistant Professor Department of Electrical and Computer Engineering

University of Arizona, Tucson, AZ

9/03 – 12/05 Senior Lecturer in Telecommunications
Faculty of Computing, Engineering and Mathematical Sciences (now Bristol Institute of Technology)
University of the West of England, Bristol, UK

9/02 – 9/03 Research Scientist
Department of Electrical and Electronic Engineering
University of Bristol
Bristol, UK

12/01 – 9/02 Research Scientist
Department of Electrical and Computer Engineering
University of Arizona, Tucson, AZ

6/01 – 12/01 Senior Member of Technical Staff
Tyco Telecommunications
Eatontown, NJ, USA

4/00 – 5/01 Postdoctoral Fellow
School of Electrical and Computer Engineering
National Technical University of Athens, Athens, Greece

1/96 – 9/00 Telecommunication Equipment Specialist
National Telecommunications Company
Nis, Yugoslavia

11/94 – 1/96 Research/Teaching Assistant
Faculty of Electronic Engineering
University of Nis
Nis, Yugoslavia

HONORS AND AWARDS

- IEEE Fellow, Nov. 2019
- Optica (OSA) Fellow, Oct. 2016
- Berge Dean's Fellow, Sept. 2020
- 1885 Society Distinguished Scholar Award, 2014
- NSF CAREER Award, 2010
- The Best Paper Award, Asia Communications and Photonics Conference (ACP) 2019
- The Best Paper in the field of Telecommunications Award and Telenor Award, ETRAN 2007
- The Best Student of the University Award, University of Nis, Nis, Yugoslavia, 1995
- The Highest GPA Student Award, University of Nis, Nis, Yugoslavia, 1995

SERVICE, OUTREACH, AND PROFESSIONAL ACTIVITIES

NATIONAL/INTERNATIONAL OUTREACH AND PROFESSIONAL ACTIVITIES

- IEEE Fellow, Nov. 2019
- OSA Fellow, Oct. 2016
- Editor, IEEE Transactions on Communications, 2021-Present
- Guest Editor, Entropy, Special Issue Physical-Layer Security, Quantum Key Distribution and Post-quantum Cryptography (Deadline for manuscript submissions: 15 June 2021)
- Associate Editor, OSA/IEEE Journal of Optical Communications and Networking (2019-Present)

- Lead Guest Editor, IEEE Signal Processing Magazine, special issue on Advanced DSP and Coding for Multi-Tb/s-per-Channel Optical Transport (publication date: March 2014)
- Member of Editorial Board, IOP Journal of Optics (2016-2021)
- Area Editor, IEEE Communications Letters (2019-2021)
- Senior Editor, IEEE Communications Letters (2018-2019)
- Editor, IEEE Communications Letters (2012-2017)
- Member of Editorial Board/Editor, Elsevier Physical Communication (PHYCOM) Journal (2016-2021)
- Member of Editorial Board, Optical and Quantum Electronics (2019-present)
- Member of Editorial Board, Frequenz (2013-Present)
- Member of Editorial Board/Editor, International Journal of Optics, 2008-2017
- Over 560 publications in scientific journals and refereed conferences
- 54 US patents granted
- 10 books published, 9 book chapters published
- 11744 paper citations; h-index 55, i10-index 246 (Google Scholar)
<https://scholar.google.com/citations?user=dPfqhb0AAAAJ&hl=en>
- 2017 IWCMC Wireless Optical Networks Symposium (IWCMC 2017 WON Symposium), TPC Member
- OFC 2021-2023 TPC Member
- IEEE Photonics Conference, 2018, 2009- 2012
 - Optical Communications Committee Member
- IEEE TELSIS 2013-Present, TPC Member
- IEEE Photonics Society Fellow
- IEEE Fellow, Jan. 2020-present
- IEEE Senior Member, Jan. 2011-Dec. 2019
- IEEE Member, 2002-2010
- IEEE Communications Society Technical Committee on Transmission, Access and Optical Systems (TAOS) (Member)
- IEEE ComSoc Signal Processing and Communications Electronics Technical Committee (Member)
- Journals and Conferences Reviewer:
 - IEEE Transactions on Information Forensics & Security
 - IEEE Photonics Technology Letters
 - IEEE Communications Letters
 - IEEE Transactions on Communications
 - IEEE/OSA Journal of Lightwave Technology
 - IEEE Transactions on Information Theory
 - IEEE Transactions on Wireless Communications
 - IEEE/OSA Journal on Selected Topics in Quantum Electronics
 - IEEE Journal of Selected Areas in Communications
 - IEEE Transactions on Signal Processing
 - Quantum Information Processing
 - IET Optoelectronics
 - OSA Optics Letters
 - OSA Optics Express
 - IEEE Communications Magazine
 - IEEE Photonics Journal
 - IEEE Transactions on Aerospace and Electronic Systems
 - Opto-Electronics Review
 - Frontiers of Optoelectronics
 - Journal of Parallel and Distributed Computing
 - AEUE International Journal of Electronics and Communications
 - Applied Physics B - Lasers and Optics
 - Wireless Personal Communications
 - Optical Engineering
 - Journal of Zhejiang University Science C (Computers & Electronics)
 - FREQUENZ
 - China Communications
 - IEEE International Conference on Communications (ICC)

- IEEE International Symposium on Information Theory (ISIT)
- IEEE Global Communications Conference (Globecom)
- Wireless and Optical Communications Conference (WOCC)
- External Examiner/Project Proposal Evaluator for:
 - Israel Science Foundation
 - European Research Council (ERC)
 - Serbian Ministry of Education, Science, and Technological Development
 - McMaster University, Canada
 - University of Melbourne, Australia
 - Gwangju Institute of Science and Technology, Gwangju, Korea

COURSES DEVELOPED

- Free-Space Optical Communications (ECE/OPTI 536A)
- Digital Communications Systems (ECE 435A/535A)
- Quantum Information Processing and Quantum Error Correction (ECE 633)
- Advanced Optical Communication Systems (ECE/OPTI632)
- Wireless Communications (ECE638) (Course modernized)
- Introduction to Digital Communications (ECE435) (Course modernized)
- Optical Communication Systems ECE/OPTI 430/530 (Course modernized)

NEW ACADEMIC DEGREE PROGRAM DEVELOPMENT

- A member of the team that developed a new joint MS degree program of two Colleges (College of Optical Sciences and College of Engineering) entitled MS in Photonic Communications Engineering, which started in Spring 2011. The ECE/OPTI 430/530 (Optical Communications Systems), thought by Dr. Djordjevic at the time, is a core course for this program. The ECE/OPTI 632 (Advanced Optical Communications) and ECE 638 (Wireless Communications), two courses developed and thought by Dr. Djordjevic, are elective courses for this program.

COURSES TAUGHT

- ECE 535A-201 Digital Communications Systems (Summer 2020, Spring 2019, Summer 2018)
- ECE/OPTI 536A: Free-Space Optical Communications Systems (Spring 2018)
- ECE 638: Wireless Communications (Spring 2020, Fall 2017, Fall 2015, Fall 2012, Fall 2010, Spring 2009)
- ECE 435A/535A Digital Communications Systems (Spring 2018, Spring 2015, Spring 2014)
- ECE 633: Quantum Information Processing and Quantum Error Correction (Fall 2018, Fall 2014, Fall 2011, Fall 2009)
- ECE 435: Introduction to Digital Communications (Fall 2011, Fall 2010, Fall 2009, Fall 2008, Fall 2004)
- ECE/OPTI 632: Advanced Optical Communication Systems (Spring 2012, Fall 2010, Fall 2007)
- ECE/OPTI 430/530: Optical Communication Systems (Spring 2010, Spring 2007, Fall 2006)
- ECE 429/529: Digital Signal Processing (Spring 2008)
- ECE 340: Engineering Systems Analysis (Spring 2012, Spring 2008)
- ECE 537: Digital Communications Systems II (2005, co-taught with Prof. Vasic)
- ECE 535: Digital Communications Systems I (2005, co-taught with Prof. Vasic)
- University of the West of England UFE004C2: Introduction to Communication Systems and Signals (two semesters' course: one semester on Signals & Systems, one semester on Communication Systems)
- University of the West of England UFE084H1: Electrical Interface (equivalent to Introduction to Electrical Engineering)

CURRENT PHD STUDENTS

- Vijay Nafria
- Chris Hall

FORMER PHD STUDENTS

- Ziwen Pan (LightPoint, San Jose, CA)
- Rahul Kumar Bhadani (University of Arizona, OPTI minor advisor)
- Xiao Han (Infinera, San Jose, CA)
- John Gariano (GD, Phoenix)

- Mingwei Yang (ASML)
- Xiaole Sun (Synopsys Inc.)
- Zhen Qu (Juniper Networks)
- Ding Zou (Pure Storage)
- Changyu Lin (Infinera)
- Tao Liu (Infinera)
- Yequn Zhang (ClariPhy)
- Murat Arabaci (ViaSat)
- Hussam G. Batshon (Subcom Tyco)
- Lyubomir L. Minkov
- Milos Ivkovic (Cornell University, co-supervised with Professors Vasic and Gabitov)
- Jose Castro (Panduit, co-advise with Dr. David Geraghty)
- Berk Akgun (Qualcomm, ECE minor advisor)

FORMER MS STUDENTS

- Rahul Kumar Bhadani (University of Arizona)
- Tyan-Lin Wang (University of Arizona)
- Sai Rakesh Mohan Krishna Vangapandu (Georgia Tech)
- Mickey Rhoades (US Navy, USS FORD)
- Xiao Han (University of Arizona, Tucson, AZ)
- Di Xiao (Evus Technologies, Tucson, AZ)
- Aotuo Dong (University of New Mexico)
- Paul Genz (University of Arizona)
- Hatice Irem Demir (TU Darmstadt, Germany) (MS thesis completed during student's visit to Dr. Djordjevic's Lab in 2014)
- Alaa Saleh (TU Darmstadt, Germany) (MS thesis completed during Dr. Djordjevic's sabbatical in 2013)
- Ding Zou (University of Arizona)
- Tao Liu (University of Arizona)
- Mahesh Sharma (Qualcomm)
- Hussam G. Batshon (Subcom Tyco)
- Samita R. Pokhrel
- Anita Patil (co-advise with Dr. David Geraghty)
- Varsha S. Rao (Qualcomm, co-advise with Prof. Bane Vasic)

PUBLICATIONS AND PATENTS

Books

- [B-1] I. B. Djordjevic, *Advanced Optical and Wireless Communications Systems, 2nd Edition*. Springer Nature Switzerland AG, Switzerland, July 2022.
- [B-2] I. B. Djordjevic, *Quantum Communication, Quantum Networks, and Quantum Sensing*. Elsevier/Academic Press, in press, July 2022.
- [B-3] I. B. Djordjevic, *Quantum Information Processing, Quantum Computing, and Quantum Error Correction, 2nd Edition*. Elsevier/Academic Press, Feb. 2021.
- [B-4] I. B. Djordjevic, *Physical-Layer Security and Quantum Key Distribution*. Springer Nature Switzerland, 2019.
- [B-5] I. B. Djordjevic, *Advanced Optical and Wireless Communications Systems*. Springer International Publishing, Switzerland, Dec. 2017.
- [B-6] I. B. Djordjevic, *Quantum Biological Information Theory*. Springer, Nov. 2015.
- [B-7] M. Cvijetic, I. B. Djordjevic, *Advanced Optical Communications and Networks*. Artech House, 2013.
- [B-8] I. B. Djordjevic, *Quantum Information Processing and Quantum Error Correction: An Engineering Approach*. Elsevier/Academic Press, 2012.
- [B-9] I. Djordjevic, W. Ryan, and B. Vasic, *Coding for Optical Channels*. Springer, 2010.
- [B-10] W. Shieh and I. Djordjevic, *OFDM for Optical Communications*. Elsevier, Oct. 2009.

BOOK CHAPTERS

- [B-11] V. M. Ilić, I. B. Djordjevic, "On the α - q -Mutual Information and the α - q -Capacities," *The Statistical Foundations of Entropy* (P. Jizba and J. Korbel, Eds.), pp. 25-47, Printed Edition of the Special Issue Published in *Entropy*, Basel: MDPI, 2022.
- [B-12] Z. Qu, I. B. Djordjevic, "Free-Space Optical Communication over Strong Atmospheric Turbulence Channels," in *Principles and Applications of Free Space Optical Communications* (A. K. Majumder, Z. Ghassemlooy, A. A. Bazil Raj, Eds.), IET Telecommunications, pp. 27-38, May 2019. (See: <https://www.theiet.org/resources/books/telecom/free-space.cfm>)
- [B-13] I. B. Djordjevic, "Advanced coding for fiber-optics communications systems," in *Optical Communication Systems: Limits and Possibilities* (A. Ellis, M. Sorokina, Eds.), pp. 191-242, Jenny Stanford Publishing Pte. Ltd., UK, June 2019.
- [B-14] I. B. Djordjevic, Z. Qu, "Coded Orbital Angular Momentum Modulation and Multiplexing Enabling Ultra-High-Speed Free-Space Optical Transmission," in *Optical Wireless Communications - An Emerging Technology*, (M. Uysal, C. Capsoni, Z. Ghassemlooy, A. Boucouvalas, E. G. Udvary, Editors), pp. 363-385, Springer, 2016.
- [B-15] I. B. Djordjevic, Z. Qu, "Coded Orbital-Angular-Momentum-Based Free-Space Optical Transmission," in *Wiley Encyclopedia of Electrical and Electronics Engineering*, Feb. 2016. (12 pages)
Available at: <http://onlinelibrary.wiley.com/doi/10.1002/047134608X.W8291/abstract>
- [B-16] I. B. Djordjevic, "Advanced coding for optical communication systems," in *Optical Fiber Telecommunications VI*, (I. Kaminow, T. Li and A. Willner, Editors), pp. 221-296, Elsevier/Academic Press, May 2013.
- [B-17] I. B. Djordjevic, "Coding and modulation techniques for optical wireless channels," in *Advanced Optical Wireless Communication Systems*, (S. Arnon, J. Barry, G. Karagiannidis, R. Schober and M. Uysal Eds.), Cambridge University Press, pages 11-53, May 2012.
- [B-18] I. B. Djordjevic, "Codes on graphs, coded modulation and compensation of nonlinear impairments by turbo equalization," in *Impact of Nonlinearities on Fiber Optic Communication*, (S. Kumar Ed.), Springer, pages 451-505, Mar. 2011.
- [B-19] I. B. Djordjevic, "Suppression of intrachannel nonlinearities in high-speed WDM systems," in *Advanced Technologies for High-Speed Optical Communications*, (L. Xu Ed.), pp. 247-277, Research Signpost, 2007.

REFEREED JOURNAL PAPERS

- [J-1] R. K. Bhadani, I. B. Djordjevic, "Optimized Squeezing Operation for Phase-Shift Keying Quantum State Discrimination," *IEEE Access*, vol. 10, pp. 63383-63393, 14 June 2022.
[Available at: <https://ieeexplore.ieee.org/document/9795304>]
- [J-2] S. Hao, H. Shi, C. N. Gagatsos, M. Mishra, B. Bash, I. Djordjevic, S. Guha, Q. Zhuang, Z. Zhang, "Demonstration of entanglement-enhanced covert sensing," *Physical Review Letters*, accepted.
- [J-3] T. Liu, S. Zhao, I. B. Djordjevic, S. Liu, S. Wang, T. Wu, B. Li, P. Wang, R. Zhang, "Analysis of Atmospheric Effects on the Continuous Variable Quantum Key Distribution," *Chinese Physics B*, Accepted 28 April 2022.
[Available at: <https://iopscience.iop.org/article/10.1088/1674-1056/ac6b1f/pdf>]
- [J-4] I. B. Djordjevic, "Entanglement-Assisted Joint Monostatic-Bistatic Radars," Special Issue *Quantum Communication, Quantum Radar, and Quantum Cipher, Entropy*, vol. 22, no. 6, p. 756, May 2022. (12 pages)
[Available at: <https://www.mdpi.com/1099-4300/24/6/756>]
- [J-5] I. B. Djordjevic, "Entanglement Assisted Radars with Transmitter Side Optical Phase Conjugation and Classical Coherent Detection," *IEEE Access*, vol. 10, pp. 49095-49100, 2022.
[Available at: <https://ieeexplore.ieee.org/document/9770047>]
- [J-6] I. B. Djordjevic, "Hybrid CV-DV Quantum Communications and Quantum Networks," *IEEE Access*, vol. 10, pp. 23284-23292, 2022.
[Available at: <https://ieeexplore.ieee.org/document/9721294>]
- [J-7] X. Han, I. B. Djordjevic, "Two-Dimensional Transmission of Four-Dimensional LDPC-Coded Modulation with Slepian Sequences for DSP-Free 40km Metro Network Applications," Special Issue *Fiber Optical Communication and Sensing Systems, Sensors*, vol. 22, no. 5, paper ID 1815, 25 Feb 2022. (Invited paper.) (9 pages)
[Available at: <https://www.mdpi.com/1424-8220/22/5/1815>]
- [J-8] I. B. Djordjevic, "On Entanglement Assisted Classical Optical Communication with Transmitter Side Optical Phase-Conjugation," *IEEE Access*, vol. 9, pp. 168930 - 168936, 22 December 2021.
[Available at: <https://ieeexplore.ieee.org/document/9658527>]
- [J-9] Z. Pan, I. B. Djordjevic, "An Overview of Geometrical Optics Restricted Quantum Key Distribution," Special Issue *Entropies, Divergences, Information, Identities and Inequalities; Entropy*, vol. 23, no. 8, p. 1003, 31 July 2021. (Invited paper) (11 pages)

- [Available at: <https://www.mdpi.com/1099-4300/23/8/1003>]
- [J-10] Z. Pan, I. B. Djordjevic, "Geometrical Optics Restricted Eavesdropping Analysis of Satellite-to-Satellite Secret Key Distillation," Special Issue *Physical-Layer Security, Quantum Key Distribution and Post-Quantum Cryptography; Entropy*, vol. 23, no. 8, p. 970, 25 July 2021. (8 pages)
[Available at: <https://www.mdpi.com/1099-4300/23/8/950>]
- [J-11] V. M. Ilić, I. B. Djordjevic, "On the α - q -Mutual Information and the α - q -Capacities," *Entropy*, vol. 23, no 6, p. 702, 01 Jun 2021. (23 pages)
[Available at: <https://www.mdpi.com/1099-4300/23/6/702>]
- [J-12] I. B. Djordjevic, "Quantum Receivers for Entanglement Assisted Classical Optical Communications," *IEEE Photonics Journal*, vol. 13, no. 3, article ID 7500114, June 2021. (Early posting: 27 April 2021)
[Available at: <https://ieeexplore.ieee.org/document/9416745>]
- [J-13] I. B. Djordjevic, "QKD-enhanced Cybersecurity Protocols," *IEEE Photonics Journal*, vol. 13, no. 2, Article ID 7600208, Apr. 2021.
[Available at: <https://ieeexplore.ieee.org/document/9390172>]
- [J-14] I. B. Djordjevic, "On Entanglement Assisted Classical Optical Communications," *IEEE Access*, vol. 9, pp. 42604 - 42609, 17 March 2021.
[Available at: <https://ieeexplore.ieee.org/document/9380130>]
- [J-15] I. B. Djordjevic, "Atmospheric Turbulence-Controlled Cryptosystems," *IEEE Photonics Journal*, vol. 13, no.1, Article ID 7900909, Feb. 2021.
[Available at: <https://ieeexplore.ieee.org/document/9333668>]
- [J-16] A. Z. Jovanovic, I. B. Djordjevic, Z. H. Peric, S. A. Vlajkov, "Circularly-Symmetric Companding Quantization-Inspired Hybrid Constellation Shaping for APSK Modulation to Increase Power Efficiency in Gaussian-Noise-Limited Channel," *IEEE Access*, vol. 9, pp. 4072 - 4083, January 8, 2021. (Early access: 28 December 2020).
[Available at: <https://ieeexplore.ieee.org/document/9309225>]
- [J-17] R. K. Bhadani, I. B. Djordjevic, "Constellation Optimization for Phase-shift Keying Coherent States with Displacement Receiver to Maximize Mutual Information," *IEEE Access*, vol. 8, pp. 224409 – 224419, 11 December 2020.
[Available at: <https://ieeexplore.ieee.org/document/9291373>]
- [J-18] Z. Pan, I. B. Djordjevic, "Secret key distillation over satellite-to-satellite free-space optics channel with a limited-sized aperture eavesdropper in the same plane of the legitimate receiver," *Optics Express*, vol. 28, no. 25, pp. 37129-37148, 2020.
[Available at: <https://doi.org/10.1364/OE.401597>]
- [J-19] I. B. Djordjevic, "Surface-Codes-Based Quantum Communication Networks," Special Issue *Physical-Layer Security, Quantum Key Distribution and Post-Quantum Cryptography; Entropy*, vol. 22, no. 9, p. 1059, 22 September 2020. (10 pages)
[Available at: <https://www.mdpi.com/1099-4300/22/9/1059>]
- [J-20] I. B. Djordjevic, "Joint QKD-Post-Quantum Cryptosystems," *IEEE Access*, vol. 8, pp. 154708–154712, 24 August 2020.
[Available at: <https://ieeexplore.ieee.org/document/9174728>]
- [J-21] I. B. Djordjevic, "On Global Quantum Communication Networking," Special Issue *Physical-Layer Security, Quantum Key Distribution and Post-Quantum Cryptography; Entropy*, vol. 22, no. 8, p. 831, 29 July 2020. (9 pages)
[Available at: <https://www.mdpi.com/1099-4300/22/8/831>]
- [J-22] Z. Pan, K. P. Seshadreesan, W. Clark, M. R. Adcock, I. B. Djordjevic, J. H. Shapiro, S. Guha, "Secret-Key Distillation across a Quantum Wiretap Channel under Restricted Eavesdropping," *Physical Review Applied*, vol. 14, no. 2, p. 024044, 2020. (Published 17 August 2020.) (18 pages)
[Available at: <https://journals.aps.org/prapplied/abstract/10.1103/PhysRevApplied.14.024044>]
- [J-23] M. Yang, L. Li, X. Liu, I. B. Djordjevic, "Real-Time Verification of Soft-Decision LDPC Coding for Burst Mode Upstream Reception in 50G-PON," *IEEE/OSA J. Lightw. Technol.*, vol. 38, no. 7, pp. 1693-1701, April 1, 2020.
[Available at: <https://ieeexplore.ieee.org/document/8937482>]
- [J-24] I. B. Djordjevic, "Hybrid QKD Protocol Outperforming both DV- and CV-QKD Protocols," *IEEE Photonics J.*, vol. 12, no. 1, p. 7600108, Feb. 2020.
[Available at: <https://ieeexplore.ieee.org/document/8865103>]
- [J-25] X. Han, M. Yang, I. B. Djordjevic, Y. Yue, Q. Wang, Z. Qu, J. Anderson, "Joint Probabilistic-Nyquist Pulse Shaping for LDPC-coded 8-PAM Signal in DWDM Data Center Communications," *Applied Sciences*, section on *Optics and Lasers*, special issue on *Optical Communications and Networking: Prospects in Industrial Applications*, vol. 9, no. 23, p. 4996, Nov. 20, 2019.
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- [J-26] I. B. Djordjevic, "On the Photon Subtraction-based Measurement-Device-Independent CV-QKD Protocols," *IEEE Access*, vol. 7, pp. 147399-147405, 11 October 2019.
[Available at: <https://ieeexplore.ieee.org/document/8864965>]
- [J-27] T.-L. Wang, I. B. Djordjevic, J. Nagel, "Laser Beam Propagation Effects on Secure Key Rates for Satellite-to-Ground Discrete Modulation CV-QKD," *Applied Optics*, vol. 58, no. 29, pp. 8061-8068, Oct. 2019.
[Available at: <https://www.osapublishing.org/ao/abstract.cfm?uri=ao-58-29-8061>]
- [J-28] M. Yang, H. Rastegarfar, I. B. Djordjevic, "Probabilistically Coded Modulation Formats for 5G Mobile Fronthaul Networks," *J. Lightwave Technol.*, vol. 37, no. 16, pp. 3882 - 3892, Aug. 15, 2019.
[Available at: <https://ieeexplore.ieee.org/document/8736362>]
- [J-29] I. B. Djordjevic, "Proposal for Slepian-States-based DV- and CV-QKD Schemes Suitable for Implementation in Integrated Photonics Platforms," *IEEE Photonics Journal*, vol. 11, no. 4, p. 7600312, Aug. 2019.
[Available at: <https://ieeexplore.ieee.org/document/8740944>]
- [J-30] I. B. Djordjevic, "Optimized-Eight-State CV-QKD Protocol Outperforming Gaussian Modulation Based Protocols," *IEEE Photonics Journal*, vol. 11, no. 4, p. 4500610, Aug. 2019.
[Available at: <https://ieeexplore.ieee.org/document/8732438>]
- [J-31] I. B. Djordjevic, "On the Discretized Gaussian Modulation (DGM)-based Continuous Variable-QKD," *IEEE Access*, vol. 7, pp. 65342-65346, 17 May 2019.
[Available at: <https://ieeexplore.ieee.org/document/8717649>]
- [J-32] Z. Qu, I. B. Djordjevic, J. Anderson, "Two-dimensional Constellation Shaping in Fiber-optics Communications," *Applied Sciences*, Special Issue "Optical Communications and Networking: Prospects in Industrial Applications," *Appl. Sci.*, vol. 9, no. 9, p. 1889, 8 May 2019.
[Available at: <https://www.mdpi.com/2076-3417/9/9/1889>]
- [J-33] Z. Qu, I. B. Djordjevic, "On the Probabilistic Shaping and Geometric Shaping in Optical Communication Systems," *IEEE Access*, vol. 7, pp. 21454 - 21464, 04 February 2019.
[Available at: <https://ieeexplore.ieee.org/document/8633909>]
- [J-34] J. Gariano, I. B. Djordjevic, "Employing Covert Communications-based Information Reconciliation and Multiple Spatial Modes to Polarization Entanglement QKD," *Optics Letters*, vol. 44, no. 3, pp. 687-690, Feb. 1, 2019.
[Available at: <https://www.osapublishing.org/ol/abstract.cfm?uri=ol-44-3-687>]
- [J-35] X. Sun, I. B. Djordjevic, "FPGA implementation of rate-adaptive spatially-coupled LDPC codes suitable for optical communications," *Optics Express*, vol. 27, no. 3, pp. 3422-3428, Feb. 4, 2019.
[Available at: <https://www.osapublishing.org/oe/abstract.cfm?uri=oe-27-3-3422>]
- [J-36] J. Gariano, I. B. Djordjevic, "Theoretical study of a submarine to submarine quantum key distribution systems," *Optics Express*, vol. 27, no. 3, pp. 3055-3064, Feb. 4, 2019.
[Available at: <https://www.osapublishing.org/oe/abstract.cfm?uri=oe-27-3-3055>]
- [J-37] Z. Qu, I. B. Djordjevic, "Orbital Angular Momentum Multiplexed Free-space Optical communication Systems Based on Coded Modulation," in *Novel Insights into Orbital Angular Momentum Beams: From Fundamentals, Devices to Applications*; *Applied Sciences*, vol. 8, no. 11, p. 2179, Nov. 2018. (10 pages) (Invited paper.)
[Available at: <https://www.mdpi.com/2076-3417/8/11/2179>]
- [J-38] T.-L. Wang, I. B. Djordjevic, "Physical-Layer Security of a Binary Data Sequence Transmitted with Bessel-Gaussian Beams Over an Optical Wiretap Channel," *IEEE Photonics Journal*, vol. 10, no. 6, p. 7908611, Dec. 2018. (11 pages)
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