LIFETIME PUBLICATIONS
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Books

1. R.K. Amineh, N.K. Nikolova, and M. Ravan, *Real-Time Three-Dimensional Imaging of Dielectric Bodies Using Microwave/Millimeter Wave Holography*. Wiley & IEEE Press, Aug. 2019.
2. N.K. Nikolova, *Introduction to Microwave Imaging*. Cambridge University Press, July 2017.

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(submitted)

Invited Courses

1. Ph.D. course at the University of Calabria, DIMES, *Introduction to Microwave Imaging*, Apr. 10-12, 2019, Rende, Italy. (3 days)

Invited Lectures

Lectures for the IEEE Distinguished Microwave Lecturer Series
Lecture title: *Microwave near-field imaging of human tissue: Hopes, challenges, outlook*

Presented at:

1. *The University of Texas at Austin*, Dept. of Electrical and Computer Engineering, Austin, Texas, Oct. 2020 (virtual).
2. *Clemson University*, Dept. of Electrical and Computer Engineering, Clemson, South Carolina, Nov. 2019.
3. *Shanghai Tech University*, School of Information Science and Technology, Shanghai, China, Dec. 2018.
4. Keynote Speech: *IEEE MTT-S Int. Conf. on Numerical Electromagnetic and Multiphysics Modeling and Optimization (NEMO 2018)*, Reykjavik, Iceland, Aug. 2018.

5. *McGill University*, Montreal, Aug. 2017.
6. *Villanova University*, Pennsylvania, Apr. 2017.
7. *Graduate Seminar Series*, Ryerson University, Toronto, Canada, Mar. 2016.
8. *IEEE Canadian Atlantic Section MTT-S Chapter*, *DalTech*, Halifax, NS, Canada, Nov. 2013.
9. *European Doctoral School*, Nuremberg, Germany, Oct. 2013.
10. *IEEE Winnipeg Waves Chapter (AP/MTT/VT), University of Manitoba*, Winnipeg, MB, Canada, Sep. 2013.
11. *IEEE New Hampshire Section's MTT-S Chapter*, Manchester, NH, Sep. 2013.
12. *IEEE Wireless and Microwave Technology Conference (WAMICON) 2013*, Tutorial, Orlando FL, Apr. 2013.
13. *The North Jersey MTT 25th Annual Symposium and Mini-Show*, East Hanover NJ, Oct. 2012.
14. *IEEE MTT Chapter of the NJ Coast Section*, Red Bank NJ, Oct. 2012.
15. *ElectroScience Laboratory*, Columbus OH, Aug. 2012.
16. *The Hamilton IEEE Section*, Hamilton ON, June 2012.
17. *Washington University at St. Louis*, Missouri, May 2012.
18. *Advanced Electromagnetics Symposium*, Paris, France, Apr. 2012.
19. *University of Arizona*, Tucson AZ, Apr. 2012.
20. *Radio Wireless Week (RWW) 2012*, Santa Clara CA, Jan. 2012.
21. *2011 IEEE International RF and Microwave Conference (RFM2011)*, Seremban, Malaysia, Dec. 2011.
22. *University of Adelaide,* Adelaide, Australia, Dec. 2011.
23. *Asia-Pacific Microwave Conference (APMC) 2011*, Melbourne, Australia, Dec. 2011.
24. *National Chung Cheng University (NCCU)*, Chiayi, Taiwan, Dec. 2011.
25. *National Taiwan University (NTU)*, Taipei, Taiwan, Nov. 2011.
26. *National Chiao Tung University (NCTU)*, Hsinchu, Taiwan, Nov. 2011.
27. *University of Minnesota*, Minneapolis, Oct. 2011.
28. *Purdue University*, Indianapolis, Sep. 2011.
29. *70th URSI CNC Meeting Symp.*, École Polytechnique de Montréal, May 2011.
30. *University of Ottawa*, May 2011.
31. *National University of Singapore*, Singapore, March 2011.
32. *University of Waterloo*, March 2011.
33. *Winter TCC meeting of the IEEE MTT-S*, Phoenix AZ, Jan. 2011.

Other invited lectures:

34. N.K. Nikolova, "Microwave and millimeter-wave imaging in real time," *Int. Conf. Electrical, Electronics and Computing Technologies (ICEECT-2024), Sharda University*, Keynote Address, India, Sep. 29, 2024 (online).
35. N.K. Nikolova, "Microwave and millimeter-wave imaging in real time," *DRDC Ottawa Seminar Series*, Apr. 24, 2024 (online).
36. N.K. Nikolova, "Microwave and millimeter-wave imaging for biomedical applications," *University of Southern California, IEEE GRSS-APS-SSCS Joint Student Chapter Seminar Series,* Jan. 26, 2024 (online).
37. N.K. Nikolova, "Microwave and millimeter-wave imaging for biomedical applications," *University of Calabria*, May 8, 2023 (online).
38. N.K. Nikolova, "Microwave and millimeter-wave imaging in real time," semi-plenary talk at the *16th European Conference on Antennas and Propagation, EuCAP 2022,* Mar. 27-Apr. 1, 2022.
39. N.K. Nikolova, "The methods of real-time microwave and millimeter-wave imaging," plenary talk at the *2021 International Applied Computational Electromagnetics Society (ACES) Symp*., Aug. 3, 2021.

40. N.K. Nikolova, "Measured system point-spread functions enable real-time quantitative imaging," *IEEE MTT-S Webinar Series*, June 22, 2021.
41. N. K. Nikolova, "Microwave and millimeter-wave near-field imaging: applications, methods and challenges," *University of Toronto*, IEEE Antennas and Propagation Society Student Chapter, March 2021.
42. N.K. Nikolova, "Microwave and millimeter-wave near-field imaging: applications, methods and challenges," *IEEE MTT-S Int. Conf. on Numerical Electromagnetic and Multiphysics Modeling and Optimization (NEMO 2019)*, Cambridge, MA, May 2019. (keynote)
43. N.K. Nikolova, "Microwave near-field imaging in real time," *Shanghai Tech University*, School of Information Science and Technology, Shanghai, China, Dec. 2018.
44. N.K. Nikolova, "Microwave near-field imaging in real time," *Shanghai Jiao Tong University*, School of Electronic, Information, and Electrical Engineering, Shanghai, China, Dec. 2018.
45. N.K. Nikolova, "Microwave near-field imaging in real time," *Southern University of Science and Technology (SUSTech)*, Shenzhen, China, Dec. 2018.
46. N.K. Nikolova, "Frontiers of wireless technology: microwave imaging," *McMaster University*, Dept. of Engineering Physics: EP3L04, Sep. 14, 2018.
47. N.K. Nikolova, "Frontiers of wireless technology: microwave imaging," *Penn State University*, University Park, PA, Apr. 18, 2018.
48. N.K. Nikolova, "Microwave near-field imaging in real time," *IEEE MTT-S Webinar Series*, April 10, 2018.
49. N.K. Nikolova, "Challenges in the microwave imaging of human tissue," *IEEE Women in Engineering Montreal Section*, McGill University, Aug. 2017.
50. N.K. Nikolova, "Challenges faced by female academics in male-dominated disciplines – a personal perspective," *Mentor of the Month*, McMaster WISE (Women in Science and Engineering) Society, Feb. 2016.
51. N.K. Nikolova, **J.J. McCombe**, **D. Shumakov**, and **A.S. Beaverstone**, ""Smart" radar for stand-off security screening in the making at Mac," *CAFÉ E-Xpress Morning Lecture Series*, McMaster University, Dec. 2015.
52. N. K. Nikolova, "Solving design problems through electromagnetic simulation," *Institute of High-Performance Computing (IHPC)*, Singapore, March 2011.
53. N.K. Nikolova, "Recent advances in the methodologies of near-field microwave imaging," *University of Toronto*, Dec. 2009.
54. N.K. Nikolova, **R.K. Amineh**, **L. Liu**, and **A. Trehan**, "Microwave imaging of the human body: beyond simulation," *Pennsylvania State University, University Park*, Oct. 2009.
55. N.K. Nikolova, "Solving design and inverse-imaging problems through electromagnetic simulation," *Defence R&D Canada – Ottawa*, Sep. 2008.
56. N.K. Nikolova, "Solving design and inverse-imaging problems through electromagnetic simulation," *Warsaw University of Technology*, May 2008.

Non-refereed Publications (Workshops, Invited Conference Presentations, Editorials, and Invited Non-technical Journal Articles)

1. N.K. Nikolova, "John Bandler's contributions to sensitivity analysis: a cornerstone of design and imaging methodologies," presented at We3B Memorial Session honoring John Bandler, *IEEE MTT-S Int. Microwave Symp*., June 2024, Washington, DC.
2. N.K. Nikolova, **A. Pitcher**, **M. Georgiev**, **G. Li**, "UWB radar for stand-off detection of concealed weapons," *Best Defence Conference*, London, Ontario, Oct. 2023.
3. J. Grosinger, D. Jiao, M. Jarrahi, D. Schreurs, and N.K. Nikolova, "Distinguished microwave

lectures: An enriching experience for MTT-S members and speakers," Women in Microwaves Column, *IEEE Microw. Mag*., vol. 24, no. 2, pp. 80-81, Feb. 2023.

4. **N.V. Shahmirzadi** and N.K. Nikolova, "Toward a planar electronically scanned imager for microwave imaging of the compressed breast," *Research Workshop of McGill University Bellairs Research Institute with Focus on Biomedical Applications of RF/Microwaves*, Barbados, Dec. 2022.
5. **R. Kazemivala** and N. K. Nikolova, "Enhancing scattered-power mapping with fast simulation-free update," *Research Workshop of McGill University Bellairs Research Institute with Focus on Biomedical Applications of RF/Microwaves*, Barbados, Dec. 2022.
6. N.K. Nikolova, **V. Tyagi**, **R. Kazemivala**, **N.V. Shahmirzadi**, and **S. Hassani**, "A glimpse at girls' paths to antenna and radio engineering," *IEEE Antennas Propag. Mag*., vol. 64, no. 2, pp. 81–88, Apr. 2022 (invited).
7. N.K. Nikolova, "Integration of imaging with communications for 6G," *Huawei Canada 8th Wireless Research Advisory Board (WRAB) Workshop on Recent Progress in 6G Research*, May 24-25, 2022, Toronto.
8. N.K. Nikolova, "Integration of imaging with communications: expectations and challenges," *Huawei Canada Workshop on Future Wireless Research*, June 29-30, 2021, on line.
9. N.K. Nikolova, "Overview of millimeter-wave and THz sensing and imaging," *Huawei Canada Workshop on Future Wireless Research*, June 25-26, 2020, on line.
10. N.K. Nikolova and **D. Tajik**, "Microwave imaging for breast-cancer screening," invited lecture for the *BioEngineering at McMaster Society (BEAMS)*, Mar. 21, 2019.
11. N.K. Nikolova, ""Smart" radar for security surveillance in the making at Mac," *Innovation Nation 2019*, Hamilton, Canada, Jan. 20, 2019. (aired on Cable 14 Hamilton, Hamilton's community cable station)
12. N.K. Nikolova (NPD), C. Baard, A. Beaverstone, E. Eveleigh, J. McCombe, A. Pitcher, A. Qureshi, D. Shumakov, Dr. V. Naydenko (PPD), M. Balakirev, V. Bendak, D. Dovhal, D. Gnatiuk, M. Kozachuk, and N. Salamatina, "Long-range stand-off microwave radar for personnel protection: NATO Science for Peace Project: SPS-G4992", *NATO SPS 60th Anniversary Gala*, Brussels, Belgium, Nov. 29, 2018.
13. N.K. Nikolova, "Microwave near-field imaging in real time," *Workshop and Qualitative and Quantitative Approaches to Inverse Scattering Problems*, Institute for Mathematical Sciences, National University of Singapore, Sep. 24–28, 2018. https://www.youtube.com/watch?v=O6jhCRLE2B8&feature=youtu.be
14. **D.S. Shumakov**, **D. Tajik**, **A.S. Beaverstone**, and N.K. Nikolova, "Experimental study of quantitative quasi-real time methods for microwave imaging," Special Session in honor of Prof. M. Iskander, *IEEE MTT-S Int. Microwave Symp.* (Honolulu, Hawai'i), June 2017.
15. N.K. Nikolova, "The basics of microwave imaging," Workshop on Principles of RF and Microwave Imaging Technology: From Radar to MRI, *IEEE MTT-S Int. Microwave Symp.* (San Francisco, CA), May 2016.
16. N.K. Nikolova, **J.J. McCombe**, **D. Shumakov**, and **A.S. Beaverstone**, ""Smart" radar for stand-off security screening in the making at Mac," *CAFÉ E-Xpress Morning Lecture Series*, McMaster University, Dec. 2015.
17. **J.J. McCombe**, N.K. Nikolova, and **D. Shumakov**, "Long-range stand-off microwave radar for personnel protection," *NATO SPS Project Meeting*, McMaster University, Dec. 2015.
18. N.K. Nikolova and Z. Chen, "Welcome message from the Technical Program Chairs," *IEEE MTT-S Int. Conf. on Numerical Electromagnetic and Multiphysics Modeling and Optimization (NEMO 2015) Conference Proceedings*, Aug. 11–14, 2015, Ottawa, Canada.
19. N.K. Nikolova, **M.S. Dadash**, and J.W. Bandler, "Field-based analytical sensitivities of scattering parameters," Workshop on Statistical Modeling of Microwave Circuits and Systems,

IEEE MTT-S Int. Microwave Symp. (Tampa, FL), June 2014.

20. N.K. Nikolova, **Y. Zhang**, and **R.K. Amineh**, "Model-based real-time reconstruction methods for microwave imaging of tissue," Workshop on Biomedical Applications of Microwaves, *European Microwave Week (EuMW) 2012* (Amsterdam, the Netherlands), Oct. 2012.
21. N.K. Nikolova and M.H. Bakr, "Overview of focus and special sessions at IMS 2012," *IEEE Microwave Mag*., June 2012.
22. M.H. Bakr and N.K. Nikolova, "IMS 2012: Panel and rump sessions," *IEEE Microwave Mag.*, June 2012.
23. N.K. Nikolova, "Challenges in the solution of inverse problems in microwave imaging," *Int. Conf. Industrial and Applied Mathematics (ICIAM 2011)* (Vancouver, Canada), July 2011.
24. N.K. Nikolova, "Microwave near-field imaging of human tissue: hopes, challenges, outlook," Workshop on Recent Developments in Microwave Imaging and Detection, *IEEE MTT-S Int. Microwave Symp.* (Baltimore, MD), June 2011.
25. N.K. Nikolova, **R.K. Amineh**, and **Li Liu**, "Exploiting electromagnetic simulations in real-time imaging and detection algorithms," Workshop on Simulation- and Surrogate-Driven Microwave Design Technology, *IEEE MTT-S Int. Microwave Symp.* (Baltimore, MD), June 2011.
26. N.K. Nikolova, **R.K. Amineh**, and **Li Liu**, "Microwave raster scanning apparatus and real-time reconstruction methods," *CRC 10 Year Anniversary Event* (Toronto), Nov. 2010.
27. N.K. Nikolova, **R.K. Amineh**, and **Li Liu**, "Microwave raster scanning apparatus and real-time reconstruction methods," *2010 Advances in Breast Cancer Research Workshop* (Fayetteville, AR), Oct. 2010.
28. **K. Moussakhani**, **S. Dadash**, and N.K. Nikolova, "Using self adjoint sensitivity analysis for design of metamaterial unit cell," *The 10th International Workshop on Finite Elements for Microwave Engineering* (Meredith, New Hampshire), Oct. 2010.
29. N.K. Nikolova and **Li Liu**, "Microwave real-time detection of scatterers using self-adjoint sensitivity analysis," *International Workshop on Advances in Modeling and Optimization of High Frequency Structures* (Reykjavik, Iceland), Aug. 2010.
30. N.K. Nikolova, **R.K. Amineh**, **A. Trehan**, and **Li Liu**, "Direct methods for detection and imaging with microwave measurements in the ultra-wide band," Workshop on Ultra Wide Band Technology – State-of-the-Art and Applications, *IEEE MTT-S Int. Symposium* (Anaheim, CA), May 2010.
31. N.K. Nikolova, **L. Liu**, **R.K. Amineh**, and **A. Trehan**, "Electromagnetic simulations aiding imaging and detection with microwaves," Workshop on New Theories, Applications and Practice of Electromagnetic Field Simulators, *IEEE MTT-S Int. Symposium* (Anaheim, CA), May 2010.
32. N.K. Nikolova, **L. Liu**, and **A. Trehan**, "Adjoint sensitivities in microwave imaging and design tuning," Workshop on EM-Based Microwave Optimization Technology: State of the Art and Applications, *IEEE MTT-S Int. Symposium* (Boston, MA), June 2009.
33. N.K. Nikolova, "From the Guest Editor's desk: Electromagnetic software in microwave engineering," *IEEE Microwave Magazine*, Guest Editorial, vol. 9, No. 6, Dec. 2008.
34. N.K. Nikolova, "Solving design and inverse-imaging problems through electromagnetic simulation," invited, *17th Int. Conference on Microwaves, Radar and Wireless Communications MIKON 2008*, May 2008.
35. **R.K. Amineh**, N.K. Nikolova, J.P. Reilly, and J.R. Hare, "Characterization of surface breaking cracks," *20th Int. Pipeline Pigging and Integrity Management Conference*, Houston, TX, Feb. 2008.
36. **A. Hasib**, **X. Zhu**, and N.K. Nikolova, "Frequency-domain sensitivity analysis for optimization with HFSS," *First-Pass System Success*, Ansoft Application Workshop for High-Performance Electronic Design, Toronto, Oct. 2007.

37. **D. Li** and N.K. Nikolova, "*S*-parameter sensitivity analysis of waveguide structures with FEMLAB," *COMSOL Multiphysics Conference*, Oct. 2005, Cambridge, MA, pp. 267–271.
38. N.K. Nikolova, "Sensitivity analysis and optimization with frequency-domain electromagnetic solvers," Workshop on *Electromagnetics-based Computer-aided Design of High-frequency Structures and Antennas*, McMaster University, Sep. 2005.
39. N.K. Nikolova, "Sensitivity analysis in the time domain: applications with the FDTD method," Workshop on *Electromagnetics-based Computer-aided Design of High-frequency Structures and Antennas*, McMaster University, Sep. 2005.
40. N.K. Nikolova, "The origin of nonuniqueness in inverse electromagnetic problems: a review," Workshop on *Field-based Synthesis and Computer Aided Design of Electromagnetic Structures*, *16th Int. Zurich Symp. on Electromagnetic Compatibility*, Feb. 2005.
41. N.K. Nikolova, "Teaching waves and electrodynamics: concepts and tools," Workshop on *Electromagnetics Education*, *IEEE MTT-S Int. Symposium* (Fort Worth, Texas), June 2004.
42. N.K. Georgieva and **Y. Rickard**, "Problem-independent enhancement of PML ABC for finite difference time domain techniques in electrodynamics," *Southern Ontario Numerical Analysis Day* (The FIELDS Institute for Research in Mathematical Sciences), Apr. 2002.
43. N.K. Georgieva, **S. Glavic**, M.H. Bakr, and J.W. Bandler, "Adjoint sensitivities for EM simulations," Workshop on *Optimization Engines for Wireless and Microwave Computer Aided Engineering*, Carleton University, Ottawa, June 2002.
44. N.K. Georgieva, **S. Glavic**, M.H. Bakr, and J.W. Bandler, "Adjoint variable methods for design sensitivity analysis with the method of moments," *CITO Annual Workshop*, Ottawa, May 2002.
45. **S. Glavic** and N.K. Georgieva, "Adjoint-based optimization of antennas with the Method of Moments," poster presentation at the *Micronet Annual Workshop* (Hull, Québec), Apr. 2002.
46. **R. Tam**, **H. Tam**, and N.K. Georgieva, "Optimization oriented transient EM simulator for the design of high-frequency structures," *Micronet Annual Workshop* (Aylmer, Québec), Apr. 2001.
47. N.K. Georgieva, "Visualization and involvement: a key to the intuitive understanding of electromagnetics and antenna theory," Workshop on *Web-Based RF and Microwave Education*, *IEEE MTT-S Int. Symposium* (Phoenix, Arizona), May 2001.
48. N.K. Georgieva, "Commercial EM simulators and optimization," Workshop on *Next Generation Optimization Methodologies for Wireless and Microwave Circuit Design*, McMaster University, June 1999.

Patents

- *On-body Concealed Weapon Detection System*, Canadian Patent No. 2,895,795, issued 5 March, 2019.
- *On-body Concealed Weapon Detection System*, United States Patent No. 10,229,328, issued 12 March, 2019.
- *On-body Concealed Weapon Detection System,* Australian Patent No. 2016222346, issued July 4, 2019.
- *Cognitive Microwave Radar for the Stand-Off Detection of On-Body Concealed Weapons,* European Patent Application: No. EP2960685, issued Nov. 13, 2019.
- *On-body Concealed Weapon Detection System*, Ukrainian Patent No. a 2015 06349, issued June 22, 2020.
- *On-body Concealed Weapon Detection System,* Hong Kong Patent No. HK1218782, issued August 28, 2020.
- *Electromagnetic Wave-Potential Communication System*, Patent No 12/184,700 (US Patent)

Licenses

Standard License Agreement L/O16-004, McMaster University:
On-body Concealed Weapon Detection System
Date Issued: 2016/3
Filing Date: 2016/03/24
Recipient: Patriot One Detection Ltd.