

LIFETIME PUBLICATIONS

(names of trainees in bold; citations per *Google Scholar*: 3363, h-index: 31, i10-index: 78)

Journal papers

(accepted)

(published)

1. **D. Tajik, F. Foroutan, D.S. Shumakov, A.D. Pitcher**, and N.K. Nikolova, “Real-time microwave imaging of a compressed breast phantom with planar scanning,” *IEEE J. Electromagnetics, RF, and Microwaves in Medicine and Biology*, accepted May 2018.
2. **F. Foroutan** and N.K. Nikolova, “Active sensor for microwave tissue imaging with bias-switched arrays,” *Sensors*, Special Issue on Sensors for Microwave Imaging and Detection, vol. 18, no. 5, 1447, May 2018.
3. **D.S. Shumakov** and N.K. Nikolova, “Fast quantitative microwave imaging with scattered-power maps,” *IEEE Trans. Microwave Theory Tech.*, vol. 66, no. 1, pp. 439–449, Jan. 2018.
4. **L.S. Kalantari**, M.H. Bakr, and N.K. Nikolova, “Sensitivity analysis of ferrites with TLM,” *IEEE Microw. Wireless Comp. Lett.*, vol. 27, no. 12, pp. 1044–1046, Dec. 2017.
5. **D. Tajik, A.D. Pitcher**, and N.K. Nikolova, “Comparative study of the Rytov and Born approximations in quantitative microwave holography,” *Progress in Electromagnetic Research B*, vol. 79, pp. 1–19, 2017.
6. **L.S. Kalantari, O.S. Ahmed**, M.H. Bakr, and N.K. Nikolova, “A TLM-based wideband adjoint variable method for sensitivity analysis of nondispersive anisotropic structures,” *IEEE Trans. Antennas Propag.*, vol. 65, no. 10, pp. 5267–5278, Oct. 10, 2017.
7. **D.S. Shumakov, A.S. Beaverstone**, and N.K. Nikolova, “De-noising algorithm for enhancing microwave imaging,” *The IET J. Eng.*, DOI: 10.1049/joe.2016.0207, Mar. 2017.
8. **A.S. Beaverstone, D.S. Shumakov**, and N.K. Nikolova, “Integral equations of scattering for scalar frequency-domain responses,” *IEEE Trans. Microwave Theory Tech.*, vol. 64, no. 4, pp. 1120–1132, Apr. 2017.
9. **D.S. Shumakov, A.S. Beaverstone**, and N.K. Nikolova, “Optimal illumination schemes for near-field microwave imaging,” *Progress in Electromagnetic Research (PIER)*, vol. 157, pp. 93–110, 2016.
10. **S. Tu, J.J. McCombe, D. S. Shumakov**, and N.K. Nikolova, “Fast quantitative microwave imaging with resolvent kernel extracted from measurements,” *Inverse Problems*, vol. 31 no. 4, **045007**, (33 pp), Apr. 2015.
11. **R.K. Amineh, J. McCombe, A. Khalatpour**, and N.K. Nikolova, “Microwave holography using measured point-spread functions,” *IEEE Trans. Instrum. & Meas.*, vol. 64, no. 2, pp. 403–417, Feb. 2015.
12. **K. Moussakhani, J.J. McCombe**, and N.K. Nikolova, “Sensitivity of microwave imaging systems employing scattering-parameter measurements,” *IEEE Trans. Microwave Theory Tech.*, vol. 62, no. 10, pp. 2447–2455, Oct. 2014.
13. **M.S. Dadash** and N.K. Nikolova, “Analytical S-parameter sensitivity formula for the shape parameters of dielectric objects,” *IEEE Microw. Wireless Comp. Lett.*, vol. 24, no. 5, pp. 291–293, May 2014.
14. N.K. Nikolova, “Microwave biomedical imaging,” *Wiley Encyclopedia of Electrical and Electronics Engineering*, pp. 1–22. (published on-line Apr. 25, 2014)
15. **M.H. Negm**, M.H. Bakr, N.K. Nikolova, and J.W. Bandler, “Wideband second-order adjoint sensitivity analysis exploiting TLM,” *IEEE Trans. Microwave Theory Tech.*, vol. 62, no. 3, pp.

- 389–398, March 2014.
16. **K. Moussakhani, R.K. Amineh**, and N.K. Nikolova, “Estimating the efficiency of antennas used as sensors in microwave tissue measurements,” *IEEE Trans. Antennas Propagat.*, vol. 62, no. 1, pp. 295–301, Jan. 2014.
 17. **S. Tu**, Q.S. Cheng, **Y. Zhang**, J.W. Bandler, and N.K. Nikolova, “Space mapping optimization of handset antennas exploiting thin-wire models,” *IEEE Trans. Antennas Propagat.*, vol. 61, no. 7, pp. 3797–3807, July 2013.
 18. **R.K. Amineh**, M. Ravan, **J. McCombe**, and N.K. Nikolova, “Three-dimensional microwave holographic imaging employing forward-scattered waves only,” *Int. J. Antennas and Propagation*, Special Issue on Inverse Scattering and Microwave Tomography in Safety, Security, and Health, vol. 2013 (2013), Article ID 897287.
 19. **R.K. Amineh, J. McCombe** and N.K. Nikolova, “Microwave holographic imaging using the antenna phaseless radiation pattern,” *IEEE Antennas Wireless Propagat. Lett.*, vol. 11, pp. 1529–1532, 2012.
 20. **Y. Zhang, S. Tu, R.K. Amineh**, and N.K. Nikolova, “Resolution and robustness to noise of the sensitivity-based method for microwave imaging with data acquired on cylindrical surfaces,” *Inverse Problems*, vol. 28, **115006**, 2012.
 21. M.K. Meshram, **R.K. Amineh**, A.T. Pimpale, and N.K. Nikolova, “A novel quad-band diversity antenna for LTE and Wi-Fi applications with high isolation,” *IEEE Trans. Antennas Propagat.*, vol. 60, no. 9, pp. 4360–4371, Sep. 2012.
 22. **Yu Zhang**, M.H. Bakr, and N.K. Nikolova, “The solution of transient electromagnetic inverse source problems using time-domain TLM method,” *IEEE Trans. Antennas Propagat.*, vol. 60, no. 9, pp. 4326–4335, Sep. 2012.
 23. **M.S. Dadash**, N.K. Nikolova, and J.W. Bandler, “Analytical adjoint sensitivity formula for the scattering parameters of metallic structures,” *IEEE Trans. Microwave Theory Tech.*, vol. 60, no. 9, pp. 2713–2722, Sep. 2012.
 24. **R.K. Amineh, A. Khalatpour**, and N.K. Nikolova, “Three-dimensional near-field microwave holography using co-polarized and cross-polarized data,” *IEEE Trans. Antennas Propagat.*, vol. 60, no. 7, pp. 3526–3531, July 2012.
 25. **Y. Zhang**, N.K. Nikolova, and M.K. Meshram, “Design optimization of planar structures using self-adjoint sensitivity analysis,” *IEEE Trans. Antennas Propagat.*, vol. 60, no. 6, pp. 3060–3066, June 2012.
 26. **R.K. Amineh, A. Khalatpour, H. Xu, Y. Baskharoun**, and N.K. Nikolova, “Three-dimensional near-field microwave holography for tissue imaging,” *Int. J. of Biomedical Imaging*, vol. 2012, Article ID **291494**, 11 pages, Apr. 2012.
 27. N.K. Nikolova, “Microwave imaging for breast cancer,” *IEEE Microwave Mag.*, vol. 12, no. 7, pp. 78–94, Dec. 2011. (invited)
 28. **R.K. Amineh, M. Ravan**, N.K. Nikolova, and **A. Khalatpour**, “Three-dimensional near-field microwave holography using reflected and transmitted signals,” *IEEE Trans. Antennas Propagat.*, vol. 59, no. 12, pp. 4777–4789, Dec. 2011.
 29. **A. Khalatpour, R.K. Amineh**, M.H. Bakr, N.K. Nikolova, and J.W. Bandler, “Accelerating space mapping optimization with adjoint sensitivities,” *IEEE Microw. Wireless Comp. Lett.*, vol. 21, no. 6, pp. 280–282, June 2011.
 30. **R.K. Amineh, M. Ravan, A. Trehan**, and N.K. Nikolova, “Near-field microwave imaging based on aperture raster scanning with TEM horn antennas,” *IEEE Trans. Antennas Propagat.*, vol. 59, no. 3, pp. 928–940, March 2011.
 31. A.G. Radwan, M.H. Bakr, and N.K. Nikolova, “Transient adjoint sensitivities for discontinuities with Gaussian material distributions,” *Progress In Electromagnetics Research B*, vol. 27, pp. 1–19, Jan. 2011.

32. **Y. Zhang**, N.K. Nikolova, and M.H. Bakr, "Input impedance sensitivity analysis of patch antenna with discrete perturbations on method-of-moment grids," *Applied Computational Electromagnetics Society Journal*, vol. 25, no. 10, pp. 867–876, Oct. 2010.
33. **L. Liu**, **A. Trehan**, and N.K. Nikolova, "Near-field detection at microwave frequencies based on self-adjoint response sensitivity analysis," *Inverse Problems*, vol. 26, **105001**, 2010.
34. **M. Ravan**, **R.K. Amineh**, and N.K. Nikolova, "Two-dimensional near-field microwave holography," *Inverse Problems*, vol. 26, no. 5, **055011**, May 2010.
35. **M. Ravan**, **R.K. Amineh**, S. Koziel, N.K. Nikolova, and J.P. Reilly "Sizing of 3-D arbitrary defects using magnetic flux leakage measurements," *IEEE Trans. Magnetics*, vol. 46, no. 4, pp. 1024–1033, Apr. 2010.
36. **M. Ravan**, **R.K. Amineh**, S. Koziel, N.K. Nikolova, and J.P. Reilly, "Sizing of multiple cracks using magnetic flux leakage measurements," *IET Science, Meas. & Tech.*, vol. 4, no. 1, pp. 1–11, Jan. 2010.
37. **L. Liu**, N.K. Nikolova, and N.T. Sangary, "Evaluation of the specific absorption rate and the temperature rise in the human eyes with account for resonance," *IEEE Trans. Microwave Theory Tech.*, vol. 57, no. 12, pp. 3450–3460, Dec. 2009.
38. **M.M. El-Desouki**, **S.M. Abdelsayed**, M.J. Deen, N.K. Nikolova, and Y.M. Haddara, "The impact of on-chip interconnections on CMOS RF circuits," *IEEE Trans. Electron Devices*, vol. 56, no. 9, pp. 1882–1890, Sep. 2009.
39. **A. Khodayari-Rostamabad**, J.P. Reilly, N.K. Nikolova, J.R. Hare, and S. Pasha, "Machine learning techniques for the analysis of magnetic flux leakage images in pipeline inspection," *IEEE Trans. Magnetics*, vol. 45, no. 8, pp. 3073–3084, Aug. 2009.
40. M.H. Bakr, **P. Zhao**, and N.K. Nikolova, "Adjoint first order sensitivities of transient responses and their applications in the solution of inverse problems," *IEEE Trans. Antennas Propagat.*, vol. 57, no. 7, pp. 2137–2146, July 2009.
41. N.K. Nikolova, **X. Zhu**, **Y. Song**, **A. Hasib**, and M.H. Bakr, "S-parameter sensitivities for electromagnetic optimization based on volume field solutions," *IEEE Trans. Microwave Theory Tech.*, vol. 57, no. 6, pp. 1526–1538, June 2009.
42. **R.K. Amineh**, **A. Trehan**, and N.K. Nikolova, "TEM horn antenna for ultra-wide band microwave breast imaging," *Progress In Electromagnetic Research B*, vol. 13, pp. 59–74, 2009.
43. **P.A.W. Basl**, M.H. Bakr, and N.K. Nikolova, "Efficient transmission line modeling sensitivity analysis exploiting rubber cells," *Progress In Electromagnetic Research B*, vol. 11, pp. 223–243, 2009.
44. **P.A.W. Basl**, M.H. Bakr, and N.K. Nikolova, "Time-domain sensitivity analysis of planar structures using first-order one-way wave equation boundaries," *Int. J. of Numerical Modelling: Electronic Networks, Devices and Fields*, vol. 21, no. 5, pp. 287–296, Sep./Oct. 2008.
45. **Y. Song** and N.K. Nikolova, "Memory efficient method for wideband self-adjoint sensitivity analysis," *IEEE Trans. Microwave Theory Tech.*, vol. 56, no. 8, pp. 1917–1927, Aug. 2008.
46. **R.K. Amineh**, S. Koziel, N.K. Nikolova, J.W. Bandler, and J.P. Reilly, "A space mapping methodology for defect characterization from magnetic flux leakage measurements," *IEEE Trans. Magnetics*, vol. 44, no. 8, pp. 2058–2065, Aug. 2008.
47. **P.A.W. Basl**, M.H. Bakr, and N.K. Nikolova, "Theory of self-adjoint S-parameter sensitivities for lossless nonhomogeneous transmission-line modeling problems," *IET Microw. Antennas Propag.*, vol. 2, no. 3, pp. 211–220, Apr. 2008.
48. **R.K. Amineh**, N.K. Nikolova, J.P. Reilly, and J.R. Hare, "Characterization of surface breaking cracks using one tangential component of magnetic leakage field," *IEEE Trans. Magnetics*, vol. 44, no. 4, pp. 516–524, Apr. 2008.
49. **Y. Song**, N.K. Nikolova, and M.H. Bakr, "Efficient time-domain sensitivity analysis using coarse grids," *Applied Computational Electromagnetics Society Journal*, vol. 23, no. 1, pp. 5–15,

March 2008.

50. **Y. Song, Ying Li**, N.K. Nikolova, and M.H. Bakr, “Self-adjoint sensitivity analysis of lossy dielectric structures with electromagnetic time-domain simulators,” *Int. J. of Numerical Modelling: Electronic Networks, Devices and Fields*, vol. 21, no. 1–2, pp. 117–132, Jan.–Apr. 2008.
51. **H.M. Jafari**, M.J. Deen, S. Hranilovic, and N.K. Nikolova, “Co-polarized and cross-polarized antenna arrays for breast cancer detection,” *IET Microw. Antennas Propag.*, vol. 1, no. 5, pp. 1055–1058, Oct. 2007.
52. **D. Li, J. Zhu**, N.K. Nikolova, M.H. Bakr, and J.W. Bandler, “Electromagnetic optimization using sensitivity analysis in the frequency domain,” *IET Microw. Antennas Propag.*, vol. 1, no. 4, pp. 852–859, Aug. 2007.
53. **S.M. Ali**, N.K. Nikolova, and M.H. Bakr, “Semi-analytical approach to sensitivity analysis of lossy inhomogeneous structures,” *Applied Computational Electromagnetics Society Journal*, vol. 22, no. 2, pp. 219–227, July 2007.
54. **H.M. Jafari**, M.J. Deen, S. Hranilovic, and N.K. Nikolova, “A study of ultra-wideband antennas for near-field imaging,” *IEEE Trans. Antennas Propagat.*, vol. 55, no. 4, pp. 1184–1188, Apr. 2007.
55. **J. Zhu**, J.W. Bandler, N.K. Nikolova, and S. Koziel, “Antenna optimization through space mapping,” *IEEE Trans. Antennas Propagat.*, vol. 55, no. 3, pp. 651–658, March 2007.
56. **M. Swillam**, M.H. Bakr, N.K. Nikolova, and X. Li, “Adjoint sensitivity analysis of dielectric discontinuities using FDTD,” *Electromagnetics*, vol. 27, no. 2, pp. 123–140, Feb. 2007.
57. M.A. El Sabbagh, M.H. Bakr, and N.K. Nikolova, “Sensitivity analysis of the scattering parameters of microwave filters using the adjoint network method,” *Int. J. RF and Microwave Computer-Aided Engineering*, vol. 16, no. 6, pp. 596–606, Nov. 2006.
58. **S.M. Ali**, N.K. Nikolova, and N.T. Sangary, “Near-field microwave nondestructive testing for defect shape and material identification,” *Nondestructive Testing and Evaluation*, vol. 21, no. 2, pp. 79–93, June 2006.
59. **S.M. Ali**, N.K. Nikolova, and M.H. Bakr, “A discrete adjoint variable method for printed circuit board CAD,” *INFORMS Journal on Computing*, vol. 18, no. 2, pp. 186–196, Spring 2006.
60. **S.M. Abdelsayed**, M.J. Deen, and N.K. Nikolova, “Parasitics-aware layout design of a low-power fully-integrated CMOS power amplifier,” *J. Vacuum Science & Technology A*, vol. 24, no. 3, pp. 835–840, May/June 2006.
61. N.K. Nikolova, **Ying Li, Yan Li**, and M.H. Bakr, “Sensitivity analysis of scattering parameters with electromagnetic time-domain simulators,” *IEEE Trans. Microwave Theory Tech.*, vol. 54, no. 4, pp. 1598–1610, Apr. 2006.
62. G.A. Kouzaev, M.J. Deen, N.K. Nikolova, and A.H. Rahal, “Cavity models of planar components grounded by via-holes and their experimental verification,” *IEEE Trans. Microwave Theory Tech.*, vol. 54, no. 3, pp. 1033–1042, March 2006.
63. N.K. Nikolova, **J. Zhu, D. Li**, M.H. Bakr, and J.W. Bandler, “Sensitivity analysis of network parameters with electromagnetic frequency-domain simulators,” *IEEE Trans. Microwave Theory Tech.*, vol. 54, no. 2, pp. 670–681, Feb. 2006.
64. M.H. Bakr, N.K. Nikolova, and **P.A.W. Basl**, “Self-adjoint S -parameter sensitivities for lossless homogeneous TLM problems,” *Int. J. of Numerical Modelling: Electronic Networks, Devices and Fields*, vol. 18, no. 6, pp. 441–455, Nov./Dec. 2005.
65. **P.A.W. Basl**, M.H. Bakr, and N.K. Nikolova, “An AVM technique for 3D TLM with symmetric condensed nodes,” *IEEE Microw. Wireless Comp. Letters*, vol. 15, no. 10, pp. 618–620, Oct. 2005.
66. Y.S. Rickard and N.K. Nikolova, “Off-grid perfect boundary conditions for the FDTD method,” *IEEE Trans. Microwave Theory Tech.*, vol. 53, no. 7, pp. 2274–2283, July 2005.

67. M.H. Bakr and N.K. Nikolova, "Efficient estimation of adjoint-variable S -parameter sensitivities with time domain TLM," *Int. J. of Numerical Modelling: Electronic Networks, Devices and Fields*, vol. 18, no. 2, pp. 171–187, March/Apr. 2005.
68. Y.S. Rickard and N.K. Nikolova, "Enhancement of PML absorbing boundary conditions for the wave equation," *IEEE Trans. Antennas Propagat.*, vol. 53, no. 3, pp. 1242–1246, March 2005.
69. G.A. Kouzaev, M.J. Deen, N.K. Nikolova, and A. Rahal, "An approximate parallel-plate waveguide model of a lossy multilayered microstrip line," *Microwave and Optical Technology Letters*, vol. 45, no. 1, pp. 23–26, Apr. 2005.
70. E.A. Soliman, M.H. Bakr, and N.K. Nikolova, "Accelerated gradient-based optimization of planar circuits," *IEEE Trans. Antennas Propagat.*, vol. 53, no. 2, pp. 880–883, Feb. 2005.
71. **P.A.W. Basl**, M.H. Bakr, and N.K. Nikolova, "Efficient estimation of sensitivities in TLM with dielectric discontinuities," *IEEE Microw. Wireless Comp. Letters*, vol. 15, no. 2, pp. 89–91, Feb. 2005.
72. N.K. Nikolova and Y.S. Rickard, "Nonradiating electromagnetic sources in a nonuniform medium," *Physical Review E*, vol. 71, **016617**, Jan. 2005.
73. G.A. Kouzaev, M.J. Deen, and N.K. Nikolova, "A parallel-plate waveguide model of lossy microstrip lines," *IEEE Microw. Wireless Comp. Letters*, vol. 15, no. 1, pp. 27–29, Jan. 2005.
74. **S.M. Ali**, N.K. Nikolova, and M.H. Bakr, "Recent advances in sensitivity analysis with frequency-domain full-wave EM solvers," *Applied Computational Electromagnetics Society Journal*, vol. 19, no. 3, pp. 147–154, Nov. 2004.
75. J.W. Bandler, **Q.S. Cheng**, **D.M. Hailu**, and N.K. Nikolova, "A space mapping design framework," *IEEE Trans. Microwave Theory Tech.*, vol. 52, no. 11, pp. 2601–2610, Nov. 2004.
76. N.K. Nikolova, "Electromagnetic boundary conditions and uniqueness revisited," *IEEE Antennas & Propagation Magazine*, vol. 46, no. 5, pp. 141–149, Oct. 2004.
77. **S.M. Ali**, N.K. Nikolova, and M.H. Bakr, "Central adjoint variable method for sensitivity analysis," *IEEE Trans. Magnetics*, vol. 40, no. 4, pp. 1969–1971, July 2004.
78. N.K. Nikolova, **R. Safian**, E.A. Soliman, M.H. Bakr, and J.W. Bandler, "Accelerated gradient based optimization using adjoint sensitivities," *IEEE Trans. Antennas Propagat.*, vol. 52, no. 8, pp. 2147–2157, Aug. 2004.
79. **N. Sangary** and N.K. Nikolova, "Line-of-sight approximation to the equivalence principle," *IEEE Trans. Antennas Propagat.*, vol. 52, no. 7, pp. 1890–1897, July 2004.
80. E.A. Soliman, M.H. Bakr, and N.K. Nikolova, "Neural networks – method of moments (NN-MoM) technique for the efficient filling of the MoM coupling matrix," *IEEE Trans. Antennas Propagat.*, vol. 52, no. 6, pp. 1521–1529, June 2004.
81. G.A. Kouzaev, M.J. Deen, N.K. Nikolova, and A.H. Rahal, "Influence of eccentricity on the frequency limitations of circular-pad grounding vias," *IEEE Microw. Wireless Comp. Letters*, vol. 14, no. 6, pp. 265–267, June 2004.
82. **S.M. Ali**, N.K. Nikolova, and M.H. Bakr, "Sensitivity analysis with full-wave EM solvers based on structured grids," *IEEE Trans. Magnetics*, vol. 40, no. 3, pp. 1521–1529, May 2004.
83. N.K. Nikolova, "A uniaxial approach to time-domain computations using EM potentials," *Int. J. of Numerical Modelling: Electronic Networks, Devices and Fields*, vol. 17, no. 3, pp. 269–284, May/June 2004.
84. N.K. Nikolova, **H.W. Tam**, and M.H. Bakr, "Sensitivity analysis with the FDTD method on structured grids," *IEEE Trans. Microwave Theory Tech.*, vol. 52, no. 4, pp. 1207–1216, Apr. 2004.
85. E.A. Soliman, M.H. Bakr, and N.K. Nikolova, "Modeling of microstrip lines using neural networks – applications to the design and analysis of distributed microstrip circuits," *Int. J. of RF and Microwave Computer-Aided Engineering*, vol. 14, no. 2, pp. 166–173, March 2004.
86. M.H. Bakr and N.K. Nikolova, "An adjoint variable method for time domain TLM with fixed

- structured grids,” *IEEE Trans. Microwave Theory Tech.*, vol. 52, no. 2, pp. 554–559, Feb. 2004.
87. E.A. Soliman, M.H. Bakr, and N.K. Nikolova, “An adjoint variable method for sensitivity calculations of multiport devices,” *IEEE Trans. Microwave Theory Tech.*, vol. 52, no. 2, pp. 589–599, Feb. 2004.
 88. M.H. Bakr and N.K. Nikolova, “An adjoint variable method for time domain TLM with wideband Johns matrix boundaries,” *IEEE Trans. Microwave Theory Tech.*, vol. 52, no. 2, pp. 678–685, Feb. 2004.
 89. N.K. Nikolova, J.W. Bandler, and M.H. Bakr, “Adjoint techniques for sensitivity analysis in high-frequency structure CAD,” *IEEE Trans. Microwave Theory Tech.*, vol. 52, no. 1, pp. 403–419, Jan. 2004.
 90. J.W. Bandler, **Q. Cheng**, N.K. Nikolova, and **M.A. Ismail**, “Implicit space mapping EM-based modeling and design exploiting preassigned parameters,” *IEEE Trans. Microwave Theory Tech.*, vol. 52, no. 1, pp. 378–385, Jan. 2004.
 91. G.A. Kouzaev, N.K. Nikolova, and M.J. Deen, “Circular-pad via model based on cavity field analysis,” *IEEE Microw. Wireless Comp. Letters*, vol. 13, no. 11, pp. 481–483, Nov. 2003.
 92. **Y.S. Rickard** and N.K. Georgieva, “Problem-independent enhancement of PML ABC for finite difference time domain techniques,” *IEEE Trans. Antennas Propagat.*, vol. 51, no. 10, pp. 3002–3006, Oct. 2003.
 93. M.H. Bakr and N.K. Nikolova, “An adjoint variable method for frequency domain TLM problems with conducting boundaries,” *IEEE Microw. Wireless Comp. Letters*, vol. 13, no. 9, pp. 408–410, Sep. 2003.
 94. W.S. Weiglhofer and N.K. Georgieva, “Vector potentials and scalarization for nonhomogeneous isotropic mediums,” *Electromagnetics*, vol. 23, no. 5, pp. 387–398, July 2003.
 95. N.K. Georgieva and W.S. Weiglhofer, “Electromagnetic vector potentials in isotropic nonhomogeneous materials: mode equivalence and scalarization,” *IEE Proc. H (Microw. Antennas Propag.)*, vol. 150, no. 3, pp. 164–170, June 2003.
 96. N.K. Georgieva and **H.W. Tam**, “Potential formalisms in electromagnetic field analysis,” *IEEE Trans. Microwave Theory Tech.*, vol. 51, no. 4, pp. 1330–1338, Apr. 2003.
 97. **Y.S. Rickard**, N.K. Georgieva, and **H.W. Tam**, “Absorbing boundary conditions for adjoint problems in the design sensitivity analysis with the FDTD method,” *IEEE Trans. Microwave Theory Tech.*, vol. 51, no. 2, pp. 526–529, Feb. 2003.
 98. **Y. Rickard**, N.K. Georgieva, and W.-P. Huang, “Application and optimization of PML ABC for the 3-D wave equation in the time domain,” *IEEE Trans. Antennas Propagat.*, vol. 51, no. 2, pp. 286–295, Feb. 2003.
 99. N.K. Georgieva, **S. Glavic**, M.H. Bakr, and J.W. Bandler, “Feasible adjoint sensitivity technique for EM design optimization,” *IEEE Trans. Microwave Theory Tech.*, vol. 50, no. 12, pp. 2751–2758, Dec. 2002.
 100. N.K. Georgieva and W.S. Weiglhofer, “Electromagnetic vector potentials and the scalarization of sources in a nonhomogeneous medium,” *Physical Review E*, vol. 66, **046614**, Oct. 2002.
 101. N.K. Georgieva, “Construction of solutions to electromagnetic problems in terms of two collinear vector potentials,” *IEEE Trans. Microwave Theory Tech.*, vol. 50, no. 8, pp. 1950–1959, Aug. 2002.
 102. **Y. Rickard**, N.K. Georgieva, and W.-P. Huang, “A perfectly matched layer for the 3-D wave equation in the time domain,” *IEEE Microw. Wireless Comp. Letters*, vol. 12, no. 5, pp. 181–183, May 2002.
 103. J.W. Bandler, N.K. Georgieva, **M.A. Ismail**, **J.E. Rayas-Sánchez**, and Q. J. Zhang, “A generalized space mapping tableau approach to microwave device modeling,” *IEEE Trans. Microwave Theory Tech.*, vol. 49, no. 1, pp. 67–79, Jan. 2001.
 104. **M.H. Bakr**, J.W. Bandler, N.K. Georgieva, and K. Madsen, “A hybrid aggressive space

- mapping algorithm for EM optimization,” *IEEE Trans. Microw. Theory Tech.*, vol. 47, no. 12, pp. 2440–2449, Dec. 1999.
105. **M.H. Bakr**, J.W. Bandler, and N.K. Georgieva, “An aggressive approach to parameter extraction,” *IEEE Trans. Microwave Theory Tech.*, vol. 47, no. 12, pp. 2428–2439, Dec. 1999.
 106. N.K. Georgieva, Z. Chen, and P. Bhartia, “Analysis of transient electromagnetic fields based on the vector potential function,” *IEEE Trans. Magnetics*, vol. 35, no. 3, pp. 1410–1413, May 1999.
 107. N.K. Georgieva, Z. Chen, and W. Oberhammer, “On resonant effects in multilayer RF/microwave printed circuit board applications,” *IEEE Trans. Components, Packaging, and Manufacturing Technology Part B*, vol. 22, no. 2, pp. 200–206, May 1999.
 108. N.K. Georgieva and E. Yamashita, “Time-domain vector-potential analysis of transmission line problems,” *IEEE Trans. Microwave Theory Tech.*, vol. 46, no. 4, pp. 404–410, Apr. 1998.
 109. N.K. Georgieva and E. Yamashita, “Finite-difference vector-potential solution of transient electromagnetic field problems,” *Int. J. of RF and Microwave Computer-Aided Engineering*, vol. 8, no. 1, pp. 56–67, Jan. 1998.
 110. N.K. Georgieva and E. Yamashita, “Finite-difference approach to the solution of time-domain integral equations for layered structures,” *IEEE Trans. Microwave Theory Tech.*, vol. 45, no. 6, pp. 984–990, June 1997.

(submitted)

Conference proceedings (refereed)

(accepted/published)

1. **F. Foroutan** and N.K. Nikolova, “Dynamic range of an active radio sensor for bias-switched arrays for microwave tissue imaging,” *IEEE AP-S/URSI Int. Symp. on Antennas and Propagation*, July 2018, Boston, MA.
2. **D. Tajik**, **F. Foroutan**, **D.S. Shumakov**, **A.D. Pitcher**, **E.A. Eveleigh**, and N.K. Nikolova, “Real-time microwave imaging of breast phantoms with constrained deconvolution of planar data,” *IEEE Int. Microwave Biomedical Conference (IMBioC)*, June 2018, Philadelphia, PA.
3. **A.D. Pitcher**, **J.J. McCombe**, **E.A. Eveleigh**, and N.K. Nikolova, “Compact transmitter for pulsed-radar detection of on-body concealed weapons,” *IEEE MTT-S Int. Microwave Symp.*, June 2018, Philadelphia, PA.
4. **D. Tajik**, **A.D. Pitcher**, **D.S. Shumakov**, N.K. Nikolova, and J.W. Bandler, “Enhancing quantitative microwave holography in tissue imaging,” *12th European Conf. on Antennas & Propagation (EuCAP’2018)*, Apr. 2018, London, UK.
5. D. Wörtge, J. Moll, M. Mälzer, V. Krozer, F. Hübner, B. Bazrafshan, T.J. Vogl, A. Santorelli, M. Popović, and N.K. Nikolova “Prototype system for microwave breast imaging: experimental results from tissue phantoms,” *11th German Microwave Conference (GeMiC 2018)*, March 2018, Freiburg, Germany.
6. **D. Tajik**, **D.S. Shumakov**, and N.K. Nikolova, “Study of the impact of noise on two real-time microwave inversion methods,” *XXXII Int. Union of Radio Science General Assembly & Scientific Symp. (URSI GASS 2017)*, Montreal, Aug. 2017.
7. **D.S. Shumakov**, **D. Tajik**, **A.S. Beaverstone**, and N.K. Nikolova, “Study of practical limitations of real-time microwave imaging of tissue,” *IEEE AP-S/URSI Int. Symp. on Antennas and Propagation*, July 2017, San Diego, CA.
8. **D. Tajik**, **D.S. Shumakov**, and N.K. Nikolova, “An experimental comparison between the Born and Rytov approximations in microwave tissue imaging,” *IEEE MTT-S Int. Microwave*

- Symp.*, June 2017, Honolulu, Hawai'i.
9. **D. Tajik, D.S. Shumakov, A.S. Beaverstone**, and N.K. Nikolova, "Quasi-real time reconstruction of the complex permittivity of tissue through microwave holography," *11th European Conf. on Antennas & Propagation (EuCAP'2017)*, March 2017, Paris, France.
 10. J. Moll, D. Wörtge, V. Krozer, A. Santorelli, M. Popovic, B. Bazrafshan, F. Hübner, T.J. Vogl, and N. Nikolova, "Quality control of a large carbon-rubber-phantom for biomedical applications using MRI, CT, X-ray and UWB microwave measurements," *11th European Conf. on Antennas & Propagation (EuCAP'2017)*, March 2017, Paris, France.
 11. **D. Tajik, J.R. Thompson, A.S. Beaverstone**, and N.K. Nikolova, "Real-time quantitative reconstruction based on microwave holography," *IEEE AP-S/URSI Int. Symp. on Antennas and Propagation*, June 2016, Fajardo, Puerto Rico.
 12. **D.S. Shumakov, A.S. Beaverstone, D. Tajik**, and N.K. Nikolova, "Experimental investigation of axial-null and axial-peak illumination schemes in microwave imaging," *IEEE AP-S/URSI Int. Symp. on Antennas and Propagation*, June 2016, Fajardo, Puerto Rico.
 13. N.K. Nikolova, **D.S. Shumakov**, and **A.S. Beaverstone**, "Obtaining system-specific Green's functions through measurements: theory and applications in microwave imaging," *IEEE AP-S/URSI Int. Symp. on Antennas and Propagation*, June 2016, Fajardo, Puerto Rico.
 14. **D.S. Shumakov, A.S. Beaverstone, J.J. McCombe**, and N.K. Nikolova, "Quadrupole illumination for microwave imaging systems," *10th European Conf. on Antennas & Propagation (EuCAP'2016)*, April 2016, Davos, Switzerland.
 15. **A.S. Beaverstone** and N.K. Nikolova, "Modeling and design of a switched transceiver array for tissue imaging," *Numerical Electromagnetic and Multiphysics Modeling and Optimization (NEMO 2015)*, Aug. 2015, Ottawa, Canada.
 16. **D.S. Shumakov, S. Tu**, and N.K. Nikolova, "Fast quantitative microwave imaging based on measured point spread functions and inversion in real space," *IEEE AP-S/URSI Int. Symp. on Antennas and Propagation*, July 2015, Vancouver, Canada.
 17. **A.S. Beaverstone** and N.K. Nikolova, "Switched sensor array for near-field microwave imaging of tissue," *IEEE AP-S/URSI Int. Symp. on Antennas and Propagation*, July 2015, Vancouver, Canada.
 18. **J.R. Thompson, J.J. McCombe, S. Tu**, and N.K. Nikolova, "Quantitative imaging of dielectric objects based on holographic reconstruction," *2015 IEEE Int. Radar Conf.*, May 2015, Arlington, VA.
 19. J. Moll, **J. McCombe**, G. Hislop, V. Krozer, and N. Nikolova, "Towards integrated measurements of dielectric tissue properties at microwave frequencies," *9th European Conf. on Antennas & Propagation (EuCAP'2015)*, Apr. 2015, Lisbon, Portugal.
 20. **S. Tu, J.J. McCombe, Y. Zhang**, and N.K. Nikolova, "Sensitivity-based imaging of tissue using measurements of calibration objects," *11th European Radar Conference (EuRAD) 2014*, Oct. 2014, Rome, Italy.
 21. **J.J. McCombe** and N.K. Nikolova, "SNR assessment of microwave imaging systems," *IEEE AP-S/URSI Int. Symp. on Antennas and Propagation*, July 2014, Memphis, TN.
 22. **K. Moussakhani, J.J. McCombe**, and N.K. Nikolova, "Sensitivity evaluation of microwave imaging systems employing scattering-parameter measurements," *IEEE AP-S/URSI Int. Symp. on Antennas and Propagation*, July 2014, Memphis, TN.
 23. **S. Tu, Y. Zhang**, and N.K. Nikolova, "Sensitivity-based quantitative imaging using planar raster scanning," *IEEE AP-S/URSI Int. Symp. on Antennas and Propagation*, July 2014, Memphis, TN.
 24. **L. Khalantari, O. Ahmed**, M.H. Bakr, and N.K. Nikolova, "Adjoint sensitivity analysis of 3D problems with anisotropic materials," *IEEE MTT-S Int. Microwave Symp.*, June 2014, Tampa Bay, FL.

25. **M.S. Dadash**, N.K. Nikolova, and J.W. Bandler, “Analytical response sensitivities of infinitesimally thin metallic shapes,” *European Microwave Conference (EuMC) 2013*, Oct. 2013, Nuremberg, Germany.
26. **J.J. McCombe**, **M.S. Georgiev**, T. Thayaparan, and N.K. Nikolova, “Clutter removal in the automatic target detection with late time responses,” *The 10th European Radar Conference (EuRAD 2013)*, Oct. 2013, Nuremberg, Germany.
27. **K. Moussakhani**, **R.K. Amineh**, and N.K. Nikolova, “Evaluating the efficiency of antennas used as sensors in microwave tissue imaging,” *IEEE AP-S/URSI Int. Symp. on Antennas and Propagation*, July 2013, Orlando, FL.
28. **R.K. Amineh**, **M. Ravan**, **J.J. McCombe**, and N.K. Nikolova, “Range resolution in microwave imaging with forward-scattered waves only,” *IEEE MTT-S Int. Microwave Symp.*, June 2013, Seattle, WA.
29. Q.S. Cheng, J.W. Bandler, S. Koziel, and N.K. Nikolova, “A statistical input space mapping approach for accommodating modeling residuals,” *IEEE MTT-S Int. Microwave Symp.*, June 2013, Seattle, WA.
30. **S. Tu**, Q.S. Cheng, J.W. Bandler, and N.K. Nikolova, “Space mapping design exploiting library antenna models,” *IEEE AP-S/URSI Int. Symp. on Antennas and Propagation*, July 2012, Chicago, IL.
31. N.K. Nikolova, **M.S. Dadash**, M.H. Bakr, and Q.-J. Zhang, “Re-discovering adjoint sensitivities: toward field-based analysis,” *IEEE MTT-S Int. Microwave Symp.*, June 2012, Montreal, Canada.
32. Q.S. Cheng, J.W. Bandler, N.K. Nikolova, and S. Koziel, “A space mapping schematic for fast EM-based modeling and design,” *IEEE MTT-S Int. Microwave Symp.*, June 2012, Montreal, Canada.
33. **M. Negm**, M.H. Bakr, and N.K. Nikolova, “Second-order time domain adjoint sensitivity analysis exploiting TLM,” *IEEE MTT-S Int. Microwave Symp.*, June 2012, Montreal, Canada.
34. **Y. Zhang**, **S. Tu**, **R.K. Amineh**, and N.K. Nikolova, “Sensitivity-based microwave imaging with raster scanning,” *IEEE MTT-S Int. Microwave Symp.*, June 2012, Montreal, Canada.
35. M.H. Bakr, J.W. Bandler, and N.K. Nikolova, “TLM: A robust tool for electromagnetics-based optimization,” *Asia-Pacific Symp. on Electromagnetic Compatibility (APEMC)*, May 2012, Singapore.
36. **R.K. Amineh**, **A. Khalatpour**, and N.K. Nikolova, “Microwave holography using transmission data only,” *Advanced Electromagnetics Symposium (AES 2012)*, Apr. 2012, Paris, France.
37. **Y. Zhang** and N.K. Nikolova, “Printed antenna design using sensitivity analysis based on method of moment solutions,” *IEEE Radio & Wireless Symp. 2012*, Jan. 2012, Santa Clara, CA.
38. **Y. Baskharoun**, **A. Trehan**, N.K. Nikolova, and M.D. Noseworthy, “Physical phantoms for microwave imaging of the breast,” *IEEE Topical Conf. Biomed. Wireless Technologies, Networks & Sensing Systems (BioWireless) 2012*, Jan. 2012, Santa Clara, CA.
39. **R.K. Amineh**, **M. Ravan**, **A. Khalatpour**, and N.K. Nikolova, “Three-dimensional near-field microwave holography,” *The Asia-Pacific Microwave Conference (APMC) 2011*, Dec. 2011, Melbourne, Australia.
40. **Y. Zhang**, **L. Liu**, and N.K. Nikolova, “Sensitivity-based imaging with near-zone microwave raster scanning,” *The 8th European Radar Conference (EuRAD 2011)*, Oct. 2011, Manchester, UK.
41. **A. Khalatpour**, **R.K. Amineh**, Q.S. Cheng, J.W. Bandler, and N.K. Nikolova, “Adjoint-accelerated design framework for novel materials in microwave applications,” *The 41st European Microwave Conference (EuMC 2011)*, Oct. 2011, Manchester, UK.
42. **K. Moussakhani**, **R.K. Amineh**, and N.K. Nikolova, “High-efficiency TEM horn antenna for

- ultra-wide band microwave tissue imaging,” *IEEE AP-S/URSI Int. Symp. on Antennas and Propagation*, July 2011, pp. 127–130, Spokane, WA.
43. Q.S. Cheng, J.W. Bandler, N.K. Nikolova, and S. Koziel, “Fast space mapping modeling with adjoint sensitivity,” *IEEE MTT-S Int. Microwave Symp.*, June 2011, Baltimore, MD.
 44. J.W. Bandler, Q.S. Cheng, N.K. Nikolova, M.H. Bakr, and S. Koziel, “Electromagnetics-based CAD and optimization of microwave circuits exploiting time-domain techniques,” *IEEE MTT-S Int. Microwave Symp.*, June 2011, Baltimore, MD.
 45. **M.S. Dadash, K. Moussakhani**, N.K. Nikolova, and **Li Liu**, “New method for exact self-adjoint sensitivity analysis of metallic shapes,” *IEEE MTT-S Int. Microwave Symp.*, June 2011, Baltimore, MD.
 46. **A. Khalatpour, R.K. Amineh, H. Xu, Y. Baskharoun**, and N.K. Nikolova, “Image quality enhancement in the microwave raster scanning method,” *IEEE MTT-S Int. Microwave Symp.*, June 2011, pp. 1–4, Baltimore, MD.
 47. **R.K. Amineh, Li Liu, H. Xu, M.S. Dadash, K. Moussakhani, Y. Baskharoun**, and N.K. Nikolova, “Practical issues in microwave raster scanning,” *European Conference on Antennas and Propagation (EuCAP 2011)*, Apr. 2011, Rome, Italy.
 48. M.H. Bakr, **Yu Zhang**, and N.K. Nikolova, “The solution of thick region inverse source problems with time domain TLM,” *29th Progress In Electromagnetics Research Symposium 2011*, March 2011, Marrakesh, Morocco.
 49. **Y. Zhang, Li Liu**, and N.K. Nikolova, “Resolution study for detection algorithm based on self-adjoint sensitivity analysis with microwave responses,” *The 27th Annual Review of Progress in Applied Computational Electromagnetics (ACES 2011)*, March 2011, Williamsburg, VA.
 50. **Y. Zhang**, M.K. Meshram, and N.K. Nikolova, “S-parameter sensitivity analysis of planar antennas using self-adjoint approach with the method of moments,” *The 27th Annual Review of Progress in Applied Computational Electromagnetics (ACES 2011)*, March 2011, Williamsburg, VA.
 51. **Yu Zhang**, M.H. Bakr, and N.K. Nikolova, “The solution of thin-region inverse source problems with noisy field data using the TLM method,” *The 27th Annual Review of Progress in Applied Computational Electromagnetics (ACES 2011)*, March 2011, Williamsburg, VA.
 52. **M. Ravan, R. K. Amineh**, S. Koziel, N.K. Nikolova, and J. P. Reilly, “Estimation of multiple surface cracks parameters using MFL testing,” *XX URSI Comm. B Int. Symp. on Electromagnetic Theory (EMT-S 2010)*, Aug. 2010, pp. 969–972, Berlin, Germany.
 53. **Li Liu, A. Trehan**, and N.K. Nikolova, “Detection using microwaves and self-adjoint sensitivity analysis,” *XX URSI Comm. B Int. Symp. on Electromagnetic Theory (EMT-S 2010)*, Aug. 2010, pp. 589–592, Berlin, Germany.
 54. **M. Ravan, R.K. Amineh**, N.K. Nikolova, “Near-field microwave holographic imaging: target localization and resolution study,” *XX URSI Comm. B Int. Symp. on Electromagnetic Theory (EMT-S 2010)*, Aug. 2010, pp. 518–521, Berlin, Germany.
 55. N.K. Nikolova and T. Thayaparan, “Parametric studies of weapon signatures and the influence of the human body in concealed weapon detection based on late-time responses,” *14th Int. Symp. on Antenna Technology and Applied Electromagnetics and the American Electromagnetics Conference (ANTEM/AMEREM 2010)*, July 2010, Ottawa, Canada.
 56. **R.K. Amineh** and N.K. Nikolova, “Design, fabrication, and characterization of ultra-wide band TEM horn for microwave imaging,” *14th Int. Symp. on Antenna Technology and Applied Electromagnetics and the American Electromagnetics Conference (ANTEM/AMEREM 2010)*, July 2010, Ottawa, Canada.
 57. **Y. Zhang** and N.K. Nikolova, “Sensitivity analysis with discrete perturbation of planar structure on method-of-moment grids,” *IEEE AP-S/URSI Int. Symp. on Antennas and Propagation*, July 2010, Toronto, Canada.

58. **R.K. Amineh, M. Ravan, A. Trehan,** and N.K. Nikolova, “Microwave imaging for breast cancer diagnosis based on planar aperture scanning,” *IEEE AP-S/URSI Int. Symp. on Antennas and Propagation*, July 2010, Toronto, Canada.
59. **M. Ravan, R.K. Amineh,** and N.K. Nikolova, “Microwave holography for near-field imaging,” *IEEE AP-S/URSI Int. Symp. on Antennas and Propagation*, July 2010, Toronto, Canada.
60. **A. Trehan, Li Liu, R.K. Amineh,** and N.K. Nikolova, “Systematic fidelity assessment of antennas for near-field microwave imaging,” *IEEE AP-S/URSI Int. Symp. on Antennas and Propagation*, July 2010, Toronto, Canada.
61. **Li Liu, A. Trehan** and Natalia K. Nikolova, “Detection at microwave frequencies based on self-adjoint sensitivity analysis,” *IEEE MTT-S Int. Microwave Symp.*, May 2010, pp. 189–192, Anaheim, CA.
62. **R.K. Amineh, M. Ravan, A. Trehan,** and N.K. Nikolova, “Near-field microwave imaging based on planar aperture scanning,” *IEEE MTT-S Int. Microwave Symp.*, May 2010, pp. 760–763, Anaheim, CA.
63. **Y. Zhang,** N.K. Nikolova, and M.H. Bakr, “Sensitivity analysis with discrete perturbations on method-of-moment grids,” *The 26th Annual Review of Progress in Applied Computational Electromagnetics (ACES 2010)*, Apr. 2010, Tampere, Finland.
64. **Li Liu, A. Trehan,** and N.K. Nikolova, “Detection based on self adjoint sensitivity analysis of microwave responses,” *The 26th Annual Review of Progress in Applied Computational Electromagnetics (ACES 2010)*, Apr. 2010, Tampere, Finland.
65. A.G. Radwan, M.H. Bakr, and N.K. Nikolova, “Transient adjoint sensitivities for problems with multiple discontinuities exhibiting space dependent properties,” *The 26th Annual Review of Progress in Applied Computational Electromagnetics (ACES 2010)*, April 2010, Tampere, Finland.
66. **R.K. Amineh, A. Trehan,** and N.K. Nikolova, “Ultra-wide band TEM horn antenna for microwave imaging of the breast,” *IEEE AP-S/URSI Int. Symp. on Antennas and Propagation*, June 2009, North Charleston, SC.
67. **L. Liu,** N.K. Nikolova, and N.T. Sangary, “Feasible methods for the evaluation of the specific absorption rate and the temperature rise in the human eyes,” *IEEE MTT-S Int. Microwave Symp.*, June 2009, pp. 1321–1324, Boston, MA.
68. **X. Zhu** and N.K. Nikolova, “Accuracy improvement of the S-parameter adjoint sensitivity analysis for shape parameters,” *IEEE MTT-S Int. Microwave Symp.*, June 2009, pp. 529–532, Boston, MA.
69. **P.A.W. Basl,** M.H. Bakr, and N.K. Nikolova, “Sensitivity analysis of microstrip structures in TLM using one-way wave equation absorbing boundaries,” *The 25th Int. Review of Progress in Applied Computational Electromagnetics (ACES 2009)*, March 2009, Monterey, CA.
70. M.H. Bakr, **P. Zhao,** N.K. Nikolova, and N. Sangary, “Adjoint sensitivity analysis of transient responses exploiting the TLM method,” *The 25th Int. Review of Progress in Applied Computational Electromagnetics (ACES 2009)*, March 2009, Monterey, CA.
71. **R.K. Amineh, A. Trehan,** and N.K. Nikolova, “Ultra-wide band TEM horn antenna for microwave imaging of the breast,” *13th Int. Symp. on Antenna Technology and Applied Electromagnetics and Canadian Radio Science Meeting (ANTEM/URSI 2009)*, Feb. 2009, Banff, Canada.
72. **M. Ravan, R.K. Amineh,** S. Koziel, N.K. Nikolova, and J.P. Reilly, “Three-dimensional defect reconstruction from MFL signals using space mapping optimization,” *13th Int. Symp. on Antenna Technology and Applied Electromagnetics and Canadian Radio Science Meeting (ANTEM/URSI 2009)*, Feb. 2009, Banff, Canada.

73. N.K. Nikolova, C. Ganea, S.M. Pasha, **R.K. Amineh**, I. Smith, R. Thompson, J.R. Hare, D. Cronin, “ERW seam inspection using circumferential flux,” *Proc. of the 7th Int. Pipeline Conference (IPC 2008)*, Sep. 2008, Calgary, Canada.
74. **L. Liu** and N.K. Nikolova, “Modeling the maximum specific absorption rate in the human eye,” *XXIX URSI General Assembly*, Aug. 2008, Chicago, IL.
75. **Y. Song** and N.K. Nikolova, “Novel approach to wideband Jacobian computation for microwave imaging,” *IEEE AP-S/URSI Int. Symp. on Antennas and Propagation*, July 2008, San Diego, CA.
76. **A. Trehan**, **R.K. Amineh**, **M.S. Georgiev**, and N.K. Nikolova, “Accuracy assessment of photogrammetry surface reconstruction for improving microwave imaging,” *IEEE AP-S/URSI Int. Symp. on Antennas and Propagation*, July 2008, San Diego, CA.
77. **P.A.W. Basl**, M.H. Bakr, and N.K. Nikolova, “Efficient TLM sensitivity analysis exploiting rubber cells,” *IEEE MTT-S Int. Microwave Symp.*, June 2008, pp. 53–56, Atlanta, GA.
78. **X. Zhu**, **A. Hasib**, N.K. Nikolova, and M.H. Bakr, “Efficient electromagnetic optimization using self-adjoint Jacobian computation based on a central-node FDFD method,” *IEEE MTT-S Int. Microwave Symp.*, June 2008, pp. 979–982, Atlanta, CA.
79. **Y. Song** and N.K. Nikolova, “Microwave breast tumor detection exploiting wideband Jacobians,” *17th Int. Conference on Microwaves, Radar and Wireless Communications (MIKON 2008)*, May 2008, Wroclaw, Poland.
80. M.H. Bakr and N.K. Nikolova, “Adjoint sensitivities for efficient optimization of high-frequency structures,” *13th Biennial IEEE Conference on Electromagnetic Field Computation (IEEE CEFC 2008)*, May 2008, Athens, Greece.
81. N.K. Nikolova, **A. Hasib**, and **X. Zhu**, “Independent sensitivity solver based on the frequency domain finite difference method,” *The 24th Int. Review of Progress in Applied Computational Electromagnetics (ACES 2008)*, March 2008, pp. 1024–1029, Niagara Falls, Canada.
82. **Y. Song** and N.K. Nikolova, “Wideband self-adjoint Jacobian computation with time-domain field solutions,” *The 24th Int. Review of Progress in Applied Computational Electromagnetics (ACES 2008)*, March 2008, pp. 522–527, Niagara Falls, Canada.
83. **R.K. Amineh**, S. Koziel, N.K. Nikolova, J.W. Bandler, and J.P. Reilly, “A space mapping methodology for defect characterization,” *The 24th Int. Review of Progress in Applied Computational Electromagnetics (ACES 2008)*, March 2008, pp. 609–614, Niagara Falls, Canada.
84. **M.A. Swillam**, M.H. Bakr, N.K. Nikolova, and X. Li, “Second order accurate adjoint sensitivities of dielectric discontinuities using FDTD,” *The 24th Int. Review of Progress in Applied Computational Electromagnetics (ACES 2008)*, March 2008, pp. 1034–1039, Niagara Falls, Canada.
85. **A. Trehan**, **R.K. Amineh**, **M.S. Georgiev**, and N.K. Nikolova, “Photogrammetry-based surface reconstruction for improving microwave breast tumor detection,” *The 24th Int. Review of Progress in Applied Computational Electromagnetics (ACES 2008)*, March 2008, pp. 68–73, Niagara Falls, Canada.
86. **P. Zhao**, M.H. Bakr, and N.K. Nikolova, “Microwave imaging exploiting adjoint based surrogate models,” *The 24th Int. Review of Progress in Applied Computational Electromagnetics (ACES 2008)*, March 2008, pp. 74–79, Niagara Falls, Canada.
87. **Y. Song** and N.K. Nikolova, “Efficient Jacobian computation for high-frequency inverse problem solutions,” *The 2nd European Conference on Antennas and Propagation (EuCAP 2007)*, Nov. 2007, Edinburgh, UK.
88. **X. Zhu**, **A. Hasib**, and N.K. Nikolova, “Electromagnetic sensitivity analysis of scattering parameters based on the FDFD method,” *Int. Symp. on Signals, Systems, and Electronics (ISSSE 2007)*, July–Aug. 2007, pp. 165–168, Montreal, Canada.

89. **D. Hailu**, N.K. Nikolova, and M.H. Bakr, "Sub-wavelength microwave radar imaging for detection of breast cancer tumors," *Int. Symp. on Signals, Systems, and Electronics (ISSSE 2007)*, July–Aug. 2007, pp. 107–110, Montreal, Canada.
90. **Y. Song**, N.K. Nikolova, and M.H. Bakr, "Recent advances in self-adjoint sensitivity analysis with electromagnetic time-domain solvers," *URSI North American Radio Science Meeting*, July 2007, Ottawa, Canada.
91. **Y. Song** and N.K. Nikolova, "Sensitivity analysis of electrically small objects in lossy inhomogeneous structures," *IEEE AP-S Int. Symposium on Antennas and Propagation*, June 2007, pp. 4453–4456, Honolulu, Hawai'i.
92. **Y. Song** and N.K. Nikolova, "Central-node approach for accurate self-adjoint sensitivity analysis of dielectric structures," *IEEE MTT-S Int. Microwave Symp.*, June 2007, pp. 895–898, Honolulu, Hawai'i.
93. **Y. Song**, N.K. Nikolova, and M.H. Bakr, "Efficient time-domain sensitivity analysis using coarse grids," *The 23rd Int. Review of Progress in Applied Computational Electromagnetics (ACES 2007)*, March 2007, pp. 386–392.
94. **P. Basl**, M.H. Bakr, and N.K. Nikolova, "Efficient sensitivity analysis of lossy discontinuities using time-domain TLM," *ANTEM/URSI 2006 Conference Proc.*, July 2006, pp. 613–616.
95. **H.M. Jafari**, M.J. Deen, S. Hranilovic, and N.K. Nikolova, "Slot antenna for ultra-wideband applications," *IEEE AP-S/URSI/AMEREM Int. Symp.*, July 2006, pp. 1107–1110.
96. **Y. Song** and N.K. Nikolova, "Feasibility study of forward electromagnetic solutions used in breast tumor detection," *IEEE AP-S/URSI/AMEREM Int. Symp.*, July 2006, pp. 1414–1417.
97. **D. Li**, N.K. Nikolova, and M.H. Bakr, "Optimization using Broyden-update self-adjoint sensitivities," *IEEE AP-S/URSI/AMEREM Int. Symp.*, July 2006, pp. 573–576.
98. **S.M. Ali**, N.K. Nikolova, and N.T. Sangary, "Microwave nondestructive defect identification using sensitivity analysis," *IEEE AP-S/URSI/AMEREM Int. Symp.*, July 2006, pp. 1391–1394.
99. **Ying Li, Yan Li**, N.K. Nikolova, and M.H. Bakr, "Time domain sensitivity analysis of lossy dielectric structures," *Frontiers of Applied Computation Electromagnetics (FACE 2006)*, June 2006, CDROM.
100. **P. Abolghasem**, M.H. Bakr, and N.K. Nikolova, "Adjoint-based TLM sensitivities exploiting the hybrid symmetrical condensed node," *Frontiers of Applied Computation Electromagnetics (FACE 2006)*, June 2006, CDROM.
101. **Ying Li**, N.K. Nikolova, and M.H. Bakr, "TLM-based self-adjoint sensitivities of S-parameters with time-domain electromagnetic solvers," *IEEE MTT-S Int. Microwave Symp. Digest*, June 2006, pp. 165–168.
102. **J. Zhu**, J.W. Bandler, N.K. Nikolova, and S. Koziel, "Antenna design through space mapping optimization," *IEEE MTT-S Int. Microwave Symp. Digest*, June 2006, pp. 1605–1608.
103. **P.A.W. Basl**, M.H. Bakr, and N.K. Nikolova, "Accelerating Cauchy interpolation using adjoint sensitivities," *The 22nd Int. Review of Progress in Applied Computational Electromagnetics (ACES 2006)*, March 2006, pp. 680–684.
104. N.K. Nikolova, **Ying Li, Yan Li**, and M.H. Bakr, "Self-adjoint Sensitivity Analysis of Linear Electromagnetic Problems in the Time Domain," *The 22nd Int. Review of Progress in Applied Computational Electromagnetics (ACES 2006)*, March 2006, pp. 685–690.
105. M.H. Bakr and N.K. Nikolova, "Self-adjoint S-parameter sensitivities for TLM problems," *The 22nd Int. Review of Progress in Applied Computational Electromagnetics (ACES 2006)*, March 2006, pp. 691–694.
106. **J. Zhu**, N.K. Nikolova, and J.W. Bandler, "Self-adjoint sensitivity analysis of high-frequency structures with FEKO," *The 22nd Int. Review of Progress in Applied Computational Electromagnetics (ACES 2006)*, March 2006, pp. 877–880.

107. **S.M. Abdelsayed**, N.K. Nikolova, and M.J. Deen, "Radiation characteristics of loop antennas for biomedical implants," *XXVIIIth General Assembly of the International Union of Radio Science*, Oct. 2005, CDROM.
108. N.K. Nikolova, **J. Zhu**, **D. Li**, and M.H. Bakr "Extracting the derivatives of network parameters from frequency-domain electromagnetic solutions," *XXVIIIth General Assembly of the International Union of Radio Science*, Oct. 2005, CDROM.
109. **P. Abolghasem**, M.H. Bakr, and N.K. Nikolova, "Recent trends in time-domain adjoint sensitivity estimation," *XXVIIIth General Assembly of the International Union of Radio Science*, Oct. 2005, CDROM.
110. **S.M. Abdelsayed**, M.J. Deen, and N.K. Nikolova, "A fully integrated low-power CMOS power amplifier for biomedical applications," *35th European Microwave Conference Proceedings*, Oct. 2005, vol. 3, pp. 1715–1718.
111. N.K. Nikolova, Y.S. Rickard, and **Ying Li**, "Accuracy and convergence of the time domain wave equation methods," *2005 Workshop on Computational Electromagnetics in the Time Domain (CEM-TD 2005) Proceedings*, Sep. 2005, pp. 36–39.
112. **J.W. Hansen** and N.K. Nikolova, "Radiated cross-power from two antennas," *2nd IASTED Int. Conference on Antennas, Radar, and Wave Propagation ARP 2005*, July 2005, pp. 354–359.
113. Y.S. Rickard, **Ying Li**, and N.K. Nikolova, "Asymptotic convergence in the FDTD and TLM methods," *2nd IASTED Int. Conference on Antennas, Radar, and Wave Propagation (ARP 2005)*, July 2005, pp. 38–43.
114. **S.M. Ali**, N.K. Nikolova, and M.H. Bakr, "Non-destructive testing and evaluation utilizing frequency-domain EM modeling," *2nd IASTED Int. Conference on Antennas, Radar, and Wave Propagation (ARP 2005)*, July 2005, pp. 29–34.
115. **S.M. Ali**, N.K. Nikolova, and M.H. Bakr, "Semi-analytical approach for sensitivity analysis with lossy dielectrics," *IEEE AP-S/URSI Int. Symp. on Antennas and Propagation Digest*, July 2005, vol. 2B, pp. 109–112.
116. Y.S. Rickard and N.K. Nikolova, "Slanted walls in the FDTD method," *IEEE AP-S/URSI Int. Symp. on Antennas and Propagation Digest*, July 2005, vol. 1A, pp. 118–121.
117. **P.A.W. Basl**, M.H. Bakr, and N.K. Nikolova, "Advances in the adjoint variable method for time-domain Transmission Line Modeling," *2005 IEEE/ACES Int. Conference on Wireless Communications and Applied Computational Electromagnetics*, Apr. 2005, pp. 293–296.
118. **P.A.W. Basl**, M.H. Bakr, and N.K. Nikolova, "Adjoint sensitivities of real objective functions for time-domain TLM," *ANTEM 2004/URSI Digest*, July 2004, pp. 123–126.
119. **S.M. Ali**, N.K. Nikolova, and M.H. Bakr, "Sensitivity analysis and optimization utilizing an approximate auxiliary problem," *IEEE AP-S/URSI Int. Symp. on Antennas and Propagation*, June 2004, pp. 1118–1121.
120. J.W. Bandler, **Q.S. Cheng**, **D.M. Hailu**, and N.K. Nikolova, "An implementable space mapping design framework," *IEEE MTT-S Int. Microwave Symp. Digest*, June 2004, pp. 703–706.
121. N.K. Nikolova and **Y.S. Rickard**, "Electromagnetic source equivalence in a nonuniform medium," *URSI International Symposium on Electromagnetic Theory Proc.*, May 2004, vol. 1, pp. 239–241.
122. **Y. S. Rickard** and N. K. Nikolova, "Enhancing the PML ABC for the wave equation," *URSI International Symposium on Electromagnetic Theory Proc.*, May 2004, vol. 1, pp. 462–464.
123. **Y.S. Rickard** and N.K. Nikolova, "Off-grid perfect BCs for the FDTD method," *20th Annual Review of Progress in Applied Computational Electromagnetics* CDROM, Apr. 2004.
124. M.H. Bakr and N.K. Nikolova, "Efficient adjoint sensitivity estimation for time-domain techniques with structured grids," *20th Annual Review of Progress in Applied Computational Electromagnetics (ACES 2004)* CDROM, Apr. 2004.

125. N.K. Nikolova, **S. Ali**, M.H. Bakr, E.A. Soliman, and J.W. Bandler, "Response sensitivity analysis with frequency-domain full-wave electromagnetic solvers," *20th Annual Review of Progress in Applied Computational Electromagnetics (ACES 2004)* CDROM, Apr. 2004.
126. G. Shen, **H.W.W. Tam**, N.K. Nikolova, and M.H. Bakr, "Adjoint sensitivity technique for FDTD methods on structured grids," *IEEE AP-S/URSI Int. Symposium on Antennas and Propagation Digest*, June 2003, vol. 3, pp. 746–749.
127. **S.M. Ali**, N.K. Nikolova, and M.H. Bakr, "Design sensitivity analysis for optimization with the frequency domain TLM," *Canadian Conference on Electrical and Computer Engineering Digest*, May 2003, vol. 3, pp. 1971–1974.
128. N.K. Nikolova, "Time-domain computations using EM potentials: a uniaxial approach," invited, *The 5th Int. Workshop on Computational Electromagnetics in the Time Domain (CEM-2003) Digest*, June 2003, pp. 143–148.
129. M.H. Bakr and N.K. Nikolova, "An adjoint variable method for time domain TLM with fixed structured grids," *IEEE MTT-S Int. Microwave Symp. Digest*, June 2003, vol. 2, pp. 1121–1124.
130. **R. Safian**, N.K. Nikolova, M.H. Bakr, and J.W. Bandler, "Feasible adjoint sensitivity technique for EM design exploiting Broyden's update," *IEEE MTT-S Int. Microwave Symp. Digest*, June 2003, vol. 1, pp. 299–302.
131. N.K. Nikolova, "A uniaxial time-domain wave potential analysis of the electromagnetic field in nonuniform media," *19th Annual Review of Progress in Applied Computational Electromagnetics (ACES 2003)*, March 2003, pp. 490–495.
132. **N. Sangary** and N.K. Georgieva, "Line-of-sight approximation to the equivalence principle," *XXVIIth General Assembly of the International Union of Radio Science (URSI)*, Aug. 2002, vol. 2, p. 34.
133. N.K. Georgieva, **S. Glavic**, M.H. Bakr, and J. W. Bandler, "Feasible adjoint sensitivity technique for EM optimization," *IEEE MTT-S Int. Microwave Symp. Digest*, June 2002, pp. 971–974.
134. J.W. Bandler, **Q. Cheng**, N.K. Georgieva, and **M.A. Ismail**, "Implicit space mapping EM-based modeling and design exploiting preassigned parameters," *IEEE MTT-S Int. Microwave Symp. Digest*, June 2002, pp. 713–716.
135. N.K. Georgieva, **S. Glavic**, M.H. Bakr, and J. W. Bandler, "Adjoint variable method for design sensitivity analysis with the method of moments," *18th Annual Review of Progress in Applied Computational Electromagnetics (ACES 2002)*, March 2002, pp. 195–201.
136. N.K. Georgieva, "On vector potential pairs in computational electrodynamics," *Asia-Pacific Radio Science Conference (AP-RASC'01)*, Aug. 2001, pp. 81.
137. M. Bakr, N.K. Georgieva, and W.J.R. Hoefler, "Efficient derivative estimation for the optimization of microstrip antennas," *Asia-Pacific Radio Science Conference (AP-RASC'01)*, Aug. 2001, pp. 92.
138. N.K. Georgieva, "Construction of solutions to electromagnetic problems in terms of two collinear vector potentials," *IEEE MTT-S Int. Microwave Symp. Digest 2001*, May 2001, vol. 3, pp. 2011–2014.
139. N.K. Georgieva, "Study on the completeness of a pair of two collinear vector potentials in electrodynamics," *URSI Int. Symposium on Electromagnetic Theory Digest 2001*, May 2001, pp. 267–269.
140. N.K. Georgieva and **Y. Rickard**, "The application of the wave potential functions to the analysis of transient electromagnetic fields," *IEEE MTT-S Int. Microwave Symp. Digest*, June 2000, vol. 2, pp. 1129–1132.
141. J.W. Bandler, N.K. Georgieva, **M.A. Ismail**, **J.E. Rayas-Sánchez**, and Q. J. Zhang, "A generalized space mapping tableau approach to microwave device modeling," *29th European Microwave Conference*, 1999, vol. 3, pp. 231–234.

142. N.K. Georgieva and **Y. Rickard**, “Time domain modelling of electromagnetic field propagation via wave potentials,” *XXVIth General Assembly of the International Union of Radio Science (URSI) Abstracts Digest*, Aug. 1999, pp. 178.
143. **M.H. Bakr**, J.W. Bandler, N.K. Georgieva, and K. Madsen, “A hybrid aggressive space mapping algorithm for EM optimization,” *IEEE MTT-S Int. Microwave Symp. Digest*, June 1999, vol. 1, pp. 265–268.
144. **M.H. Bakr**, J.W. Bandler, and N.K. Georgieva, “An aggressive approach to parameter extraction,” *IEEE MTT-S Int. Microwave Symp. Digest*, June 1999, vol. 1, pp. 261–264.
145. **M.H. Bakr**, J.W. Bandler, and N.K. Georgieva, “Modeling of microwave circuits exploiting space derivative mapping,” *IEEE MTT-S Int. Microwave Symp. Digest*, June 1999, vol. 2, pp. 715–718.
146. J.W. Bandler, **M.H. Bakr**, N.K. Georgieva, **M.A. Ismail**, and D.G. Swanson, Jr., “Recent results in electromagnetic optimization of microwave components including microstrip T-junctions,” *Proc. 15th Annual Review of Progress in Applied Computational Electromagnetics (ACES 99)*, 1999, pp. 326–333.
147. N.K. Georgieva, Z. Chen, and P. Bhartia, “Analysis of transient electromagnetic fields based on the vector potential function,” *The 8th Biennial IEEE Conference on Electromagnetic Field Computation (CEFC’98)*, June 1998, pp. 98–101.
148. N.K. Georgieva, Z. Chen, and P. Bhartia, “Transient analysis of antenna parameters based on the vector-potential function,” *IEEE AP-S/URSI Int. Symp. on Antennas and Propagation*, June 1998, vol.4, pp. 2310–2313.
149. N.K. Georgieva, Z. Chen, and W. Oberhammer, “Time-domain vector-potential analysis of complex RF multilayer structures via segmentation technique,” *IEEE MTT-S Int. Microwave Symp. Digest*, June 1998, vol. 2, pp. 485–488.
150. N.K. Georgieva and E. Yamashita, “Finite-difference vector-potential time-domain approach to the analysis of planar structures,” *IEEE MTT-S Int. Microwave Symp. Digest*, June 1997, vol. 2, pp. 981–985.
151. N.K. Georgieva and E. Yamashita, “Analysis method for transient fields in planar structures by marching-on-in-time integral equation technique”, *IEEE MTT-S Int. Microwave Symp. Digest*, June 1996, pp. 1051–1054.
152. N.K. Georgieva, “Analysis of the characteristic parameters of microstrip lines by the boundary element method,” *Annual Symposium in Electronics (Gabrovo, Bulgaria)*, June 1992.

(submitted)

Invited Lectures

Lectures under the IEEE Distinguished Microwave Lecturer Series

Lecture title: *Microwave near-field imaging of human tissue: hopes, challenges, outlook*

Presented at:

1. Keynote Speech: *IEEE MTT-S Int. Conf. on Numerical Electromagnetic and Multiphysics Modeling and Optimization (NEMO 2018)*, Aug. 8–10, 2018, Reykjavik, Iceland.
2. *McGill University*, Montreal, Aug. 2017.
3. *Villanova University*, Pennsylvania, Apr. 2017.
4. *Graduate Seminar Series*, Ryerson University, Toronto, Canada, Mar. 2016.
5. *IEEE Canadian Atlantic Section MTT-S Chapter, DalTech*, Halifax, NS, Canada, Nov. 2013.
6. *European Doctoral School*, Nuremberg, Germany, Oct. 2013.

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

Other invited lectures:

31. N.K. Nikolova, "Frontiers of wireless technology: microwave imaging," *Penn State University, University Park, PA, Apr. 2018.*
32. N.K. Nikolova, "Microwave near-field imaging in real time," *IEEE MTT-S Webinar Series, April 10, 2018.*
33. N.K. Nikolova, "Challenges in the microwave imaging of human tissue," *IEEE Women in Engineering Montreal Section, McGill University, Aug. 2017.*
34. 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.*
35. 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.*
36. N. K. Nikolova, "Solving design problems through electromagnetic simulation," *Institute of High-Performance Computing (IHPC), Singapore, March 2011.*
37. N.K. Nikolova, "Recent advances in the methodologies of near-field microwave imaging," *University of Toronto, Dec. 2009.*
38. 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.*
39. N.K. Nikolova, "Solving design and inverse-imaging problems through electromagnetic simulation," *Defence R&D Canada – Ottawa, Sep. 2008.*

40. N.K. Nikolova, "Solving design and inverse-imaging problems through electromagnetic simulation," *Warsaw University of Technology*, May 2008.

Books

1. N.K. Nikolova, *Introduction to Microwave Imaging*. Cambridge University Press, July 2017.

Book Chapters

1. **D.S. Shumakov, D. Tajik, A.S. Beaverstone**, and N.K. Nikolova, "Real-time quantitative reconstruction methods in microwave imaging," Chapter 17, in A. Lakhtakia and C.M. Furse, Eds., *The World of Applied Electromagnetics - In Appreciation of Magdy Fahmy Iskander*. Springer, 2017 <http://www.springer.com/gp/book/9783319584027> (ISBN 978-3-319-58402-7).
2. G. Kouzaev, M.J. Deen, and N. Nikolova, "Transmission lines and passive components," Chapter II in M.J. Deen, Guest Ed., *Advances in Imaging and Electron Physics, vol. 174: Silicon-Based Millimeter-Wave Technology, Measurement, Modeling and Applications*. Academic Press, 2012 (ISBN 978-0-12-394298-2).
3. N.K. Nikolova, **M. Ravan**, and **R.K. Amineh**, "Substrate integrated antennas on silicon," Chapter VI in M.J. Deen, Guest Ed., *Advances in Imaging and Electron Physics, vol. 174: Silicon-Based Millimeter-Wave Technology, Measurement, Modeling and Applications*. Academic Press, 2012 (ISBN 978-0-12-394298-2).
4. N. Georgieva, "Time-domain theory and applications of electromagnetic potentials," in *Recent Research Development in Microwave Theory & Techniques (vol. 2)*, Transworld Research Network, 2002. (ISBN 81-7736-099-X)
5. N. Georgieva, Chapter IV, "Electromagnetic induction, time-varying electromagnetic fields, electromagnetic energy," in M. Ivanova, S.V. Savov, E. Panov, N. Georgieva and R. Vassilev, *Solved Problems in Electromagnetics*, Technical University of Varna Press Center, 1997 (in Bulgarian)

Patents

- *On-body Concealed Weapon Detection System*, United States Provisional Application: No. 62/017,410 (priority date, June 26, 2014), now expired.
- *On-body Concealed Weapon Detection System*, United States Utility Patent Application: No. 14/751,796 (filed June 26, 2015).
- *On-body Concealed Weapon Detection System*, Canadian Patent Application: No. CA 2,895,795 (filed June 26, 2015).
- *On-body Concealed Weapon Detection System*, Ukrainian Patent Application: No. a 2015 06349 (filed June 26, 2015).
- *Cognitive Microwave Radar for the Stand-Off Detection of On-Body Concealed Weapons*, European Patent Application: No. EP15174116.2 (filed June 26, 2015).
- *On-body Concealed Weapon Detection System*, Hong Kong Patent Application: No. 16106764.3 (filed June 13, 2016).
- *On-body Concealed Weapon Detection System*, to be filed in Australia 2016.
- *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.

Non-refereed Publications (Workshop, Invited Conference Presentations, Editorials)

1. **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.
2. 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.
3. 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.
4. **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.
5. 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.
6. 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.
7. 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.
8. N.K. Nikolova and M.H. Bakr, “Overview of focus and special sessions at IMS 2012,” *IEEE Microwave Mag.*, June 2012.
9. M.H. Bakr and N.K. Nikolova, “IMS 2012: Panel and rump sessions,” *IEEE Microwave Mag.*, June 2012.
10. 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.
11. 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.
12. 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.
13. 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.
14. 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.
15. **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.
16. 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.
17. 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.
18. 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.
 19. 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.
 20. 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.
 21. 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.
 22. **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.
 23. **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.
 24. **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.
 25. 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.
 26. 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.
 27. 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.
 28. N.K. Nikolova, “Teaching waves and electrodynamics: concepts and tools,” Workshop on *Electromagnetics Education*, *IEEE MTT-S Int. Symposium* (Fort Worth, Texas), June 2004.
 29. 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.
 30. 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.
 31. 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.
 32. **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.
 33. **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.
 34. 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.
 35. N.K. Georgieva, “Commercial EM simulators and optimization,” Workshop on *Next*

Generation Optimization Methodologies for Wireless and Microwave Circuit Design,
McMaster University, June 1999.