

# Anastasios Drosopoulos, PhD

Professor, Electrical & Computer Engineering

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## Summary

Dr Anastasios Drosopoulos received his BSc (Physics) from the University of Patras, Greece, and both the MSc (Physics) and PhD (Electrical Engineering), from McMaster University, Hamilton, Ontario, Canada, in 1987 and 1992 respectively. From 1991 to 1997, he worked at the Defense Research Establishment, Ottawa, Canada, with the Spaceborne Synthetic Aperture Radar group, where he did applied research in the areas of modeling of microwave scattering, propagation and statistical detection from sea clutter. In 1997 he joined Nortel, Ottawa, where he worked in the area of optical communications, designing and testing DSP software to improve performance of DWDM Erbium doped optical amplifiers. In 1999 he joined the Atmel Multimedia and Communications group in Patras, Greece, where he worked in wireless network applications. Since 2003 he has been with the Technological Education Institute of Western Greece (formerly TEI of Patras) as a Professor of Electrical Engineering. Recently (2019) the Engineering School of TEI has been integrated into the University of the Peloponnese and the department has been renamed to Electrical & Computer Engineering. His research interests include applications and modelling of communication and electrical energy systems.

## Education

Jan 87 - Sep 91:	PhD (Electrical Engineering) McMaster University, Hamilton, Ontario, Canada
Advisor:	Dr. S. Haykin, Director of CRL, the Communications Research Lab of McMaster University
Topic:	Diffuse Multipath Investigation at Low Grazing Angles
Skills:	Array signal processing, software design/coding modeling/implementation. Communications background and protocols.
Summary:	Modeling and simulation of diffuse multipath, at microwave frequencies, over the sea surface. Model validation was carried out with data collected with a 32-element array, designed and built at the McMaster University Communications Research Laboratory (CRL).
Jul 84 - Aug 86:	MSc (Physics) McMaster University, Hamilton, Ontario, Canada.
Advisors:	Drs. P. Jessop and B. Garside
Topic:	RF Sputtering and Characterization of LiNbO <sub>3</sub> Thin Films.
Skills:	Experience with lasers, fiber, electro- and integrated optics.
Summary:	Fabrication of single-crystal, low-attenuation LiNbO <sub>3</sub> thin films suitable for electro-optic devices. Process used was reactive RF sputtering followed by thermal annealing. A variety of characterization techniques were employed (X-rays, SEM, TEM, laser coupling).
Sep 78 - Jun 82:	BSc (Honours Physics) University of Patras, Patras, Greece

## Work experience

<b>TEI Patras</b> <b>University of Peloponnese (since 2019)</b>	<b>Professor Electrical Engineering</b> Dec 2003 – present
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- Teaching (Courses: Electrical Circuits, Electrotechnical Applications, Powerline Communications, Digital Communications, Sensors and Technology)
- Research (Interests: Wireless and Powerline Digital Communications, Modeling/Simulation, Energy Systems)
- Administrative duties (Head of Electrical Engineering Dept. Nov 2015-2019, Head of Optics and Optometry Dept. 2014-2015, Head of Energy Systems Section 2004-2014)

<b>Atmel</b>	<b>Senior Development Engineer &amp; Project Manager</b> Sep 1999 - Dec 2003
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- Initially member of Bluetooth group. Development / testing of products based on the Bluetooth specification.

- Project Manager of Bluetooth group.

Nortel	DSP Designer Sep 1997 - Aug 1999
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- Member of DSP team in Optical Amplifier Group.
- Development / testing of new DSP algorithms for the purpose of monitoring system performance of DWDM fiber optic communication systems.
- Implementation of Optical Reflection algorithms on a Motorola DSP56307 chip as part of next generation amplifier product.
- Verification / testing / support of Optical Amplifier performance in current bidirectional systems.

Defense Research Establishment Ottawa Aerospace Radar and Navigation	Defense Scientist Sep 1991 - Sep 1997
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- Research and development of new signal/image processing techniques that improve radar detection performance in noisy clutter environments.
- Initiated major effort on understanding propagation and scattering aspects of sea clutter that limit radar performance. Developed appropriate signal processing techniques to enhance overall system performance. This work was used in design of retrofits to the DREO CP-140 radar. Parts of this work were used in contracts for implementation in XDM and ADM version of above radar.
- Key member in Joint-Space-Program/DND group. Developed appropriate signal/image processing techniques to evaluate/utilize RADARSAT imagery.
- Design of systems and preliminary hardware implementation of improved DSP techniques for radar detection on VME based Mercury quad-i860 boards, based on VxWorks.
- Key team member for design of broadband microwave downlink system for transmission of compressed SAR imagery.
- Contract award and management.

## Contracts Managed

*Part of my duties as a DREO scientist was to manage small projects (5-10 people groups) that usually involved organizing/scheduling field trips for data collection as well as design/modeling of novel techniques for data processing. Each project had a budget of around 100k CAN\$.*

1. Hardware Implementation of Multi-CFAR Processor (1997)
2. Implementation and Validation Studies on the Multi-CFAR Adaptive Processor (1996)
3. Preliminary Theoretical Investigation on Chaotic Modeling of Sea Clutter (1996)
4. Performance Evaluation of Neural Network Based SAR image compression algorithms (1996)
5. Clutter Classification and Adaptive CFAR Detection Architecture Development (1995)
6. East Coast Sea Surface Wave Measurements (1995)
7. Implementation of New Search and Imaging Radar Detection Algorithms and Testing with Real Clutter Data (1994)
8. Coherent Radar Ocean Backscatter Model Development and Validation (1994)
9. Collection of Ocean Radar Backscatter Data Using McMaster's Mobile Radar Laboratory (1993)

## Publications

### Journal:

1. S.K. Bandari, V.V. Mani and A. Drosopoulos, "Novel hybrid PAPR reduction schemes for the MGFDM system", *Physical Communication* 31(2018)69-78
2. S.K. Bandari, V.V. Mani and A. Drosopoulos, "Training Based Channel Estimation for Multitaper GFDM System", *Hindawi: Mobile Information Systems*, Volume 2017 (2017), Article ID 4747256, 8 pages, <https://doi.org/10.1155/2017/4747256>
3. S.K. Bandari, V.V. Mani and A. Drosopoulos, "PAPR analysis of wavelet based multitaper GFDM system", *Int. Journal of Electronics and Communications*, 76(2017)166-174

4. S.K. Bandari, V.V. Mani and A. Drosopoulos, "Performance analysis of GFDM in various fading channels", *COMPEL: Int. Journal for Computation and Mathematics in Electrical and Electronic Engineering*, 35(2016)225-244
5. A.D. Theocharis, V.P. Charalambakos, A. Drosopoulos and J. Miliadis-Argitis, "Equivalent circuit of photovoltaic generator using Newton-Raphson algorithm", *COMPEL: Int. Journal for Computation and Mathematics in Electrical and Electronic Engineering*, 31(2012)1224-1245
6. A. Drosopoulos and M. Hatziprokopiou, "Planning and Development of Lab Training Activities for Powerline Communications", *IEEE Trans. On Education*, 53(2010)384-389
7. G. Hennessey, H. Leung, A. Drosopoulos and P.C. Yip, "Sea Clutter Modeling using a Radial Basis Function Neural Network", *IEEE Journal of Oceanic Engineering*, 26(2001)358-372
8. H. Leung, G. Hennessey and A. Drosopoulos, "Signal Detection Using the Radial Basis Function Coupled Map Lattice", *IEEE Trans. On Neural Networks*, 11(2000)1133-1151
9. V. Anastassopoulos, G.A. Lampropoulos, A. Drosopoulos and M. Rey, "High Resolution Radar Clutter Statistics", *IEEE Trans. on Aerospace and Electronic Systems*, 35(1999)43-60
10. A. Drosopoulos and S. Haykin, "Angle-of-Arrival Estimation in the Presence of Multipath", *Electronics Letters*, 27(1991)2273-2274
11. A. Drosopoulos and S. Haykin, "Experimental Characterization of Diffuse Multipath at 10.2 GHz using the Method of Multiple Windows", *Electronics Letters*, 27(1991)798-799

#### Conference:

1. S.K. Bandari, V.V. Mani and A. Drosopoulos, "Convolutional codes for MGFDM system", 2017 International Conference on Information and Communication Technology Convergence (ICTC 2017), Jeju, South Korea, 2017, pp. 545-550.
2. S.K. Bandari, V.V. Mani and A. Drosopoulos, "Robust Precoded OSTBC for GFDM Systems", *Procedia Computer Science - Proceedings of the 6th International Conference on Advances in Computing and Communications*, 93(2016)176-182.
3. S.K. Bandari, V.V. Mani and A. Drosopoulos, "GFDM/OQAM Implementation under Rician Fading Channel", 2016 International Conference on Advances in Computing, Communications and Informatics (ICACCI 2016), Jaipur, India, 2016, pp. 256-260.
4. S.K. Bandari, V.V. Mani and A. Drosopoulos, "OQAM Implementation of GFDM", 23rd International Conference on Telecommunications (ICT 2016), Thessaloniki, Greece, 2016, pp. 630-634.
5. S.K. Bandari, V.V. Mani and A. Drosopoulos, "Multi-taper implementation of GFDM", *IEEE Wireless Communications and Networking Conference (WCNC 2016)*, Doha, Qatar, 2016, pp. 1-5.
6. S.K. Bandari, A. Drosopoulos and V.V. Mani, "Exact SER Expressions of GFDM in Nakagami-m and Rician fading channels", *European Wireless Conference*, Budapest, Hungary, 2015, pp. 295-300.
7. A.D. Theocharis, V.P. Charalampakos and A. Drosopoulos, "Equivalent linearized circuit of photovoltaic generator appropriate for implementation in electromagnetic transient software programs", *Environment and Electrical Engineering (EEEIC)*, 10th International Conference on, Rome, Italy, 2011, pp. 1-4
8. A. Drosopoulos and D. Protopapadakis, "Controlling electrical appliances through an AVR microcontroller based on external sensor stimuli", 5th WSEAS/IASME Int. Conf. on Engineering Education, Heraklion, Greece, 2008, pp. 95-98.
9. A. Drosopoulos, M. Hatziprokopiou and E. Hatziprokopiou, "Training Engineers for Powerline Communications", 5th WSEAS/IASME Int. Conf. on Engineering Education, Heraklion, Greece, 2008, pp. 366-371.
10. A. Drosopoulos, M. Hatziprokopiou, A. Kotsifas and C. Tagios, "Performance Evaluation of Commercially Available PLC Modems", 7th WSEAS/IASME Int. Conf. on Power Systems, High Voltages and Electric Machines, Venice, Italy, 2007, pp. 192-197.
11. G.A. Lampropoulos, G. Gigli and A. Drosopoulos, "Parametric Estimation of Clutter pdf Models", *International Conference on Applications of Photonic Technology 1998, ICAPT98*, Ottawa, 1998, SPIE vol. 3491, pp. 973-980.
12. G.A. Lampropoulos, R. Hui and A. Drosopoulos, "Parametric Estimation Techniques of Statistical Models and their Application to SAR Images", *Advanced Signal Processing: Algorithms, Architectures and Implementation VII*, part of SPIE's Conference on Optical Science, Engineering and Instrumentation '97, San Diego, California, July 27-Aug 1, 1997.
13. H. Leung, G. Hennessey and A. Drosopoulos, "Target Detection in an Oceanic Environment Using Spatial Temporal Chaos", *IEEE Inter. Conf. on Systems, Man and Cybernetics*, vol. 4, pp. 3517-3521, 1997.
14. V. Anastassopoulos, G.A. Lampropoulos, A. Drosopoulos and M. Rey, "An AVME Clutter Map Design Approach for CFAR Adaptive Threshold Selection of SAR Images", *ICAPT96*, Montreal, Canada, 1996, pp. 695-700.

15. A. Drosopoulos and A. Damini, "A Comparison of Compression Methods for SAR Images", ICAPT96, Montreal, Canada, 1996, pp. 701-709.
16. G. Hennessey, H. Leung and A. Drosopoulos, "Radar Image Modeling and Detection using Neural Networks", ICAPT96, Montreal, Canada, 1996, pp. 711-721.
17. A. Drosopoulos, "Validation of a Sea Surface Scattering Model", Progress in Electromagnetics Research Symposium (PIERS-95), July 1995, Seattle, Washington.
18. A. Drosopoulos and S. Haykin, "Bearing Estimation in a Colored Noise Background Using the Method of Multiple Windows", Proc. International Conference on Acoustics, Speech and Signal Processing, ICASSP-92, San Francisco, 5(1992)385-388.
19. A. Drosopoulos and S. Haykin, "Characterization of Diffuse Multipath at Low Grazing Angles", Proc. National Radio Science Meeting (URSI), January 1992, Boulder, Colorado.
20. S. Fotopoulos, T. Deliyannis and A. Drosopoulos, "A Comparison of Four Active Network Realizations of a 12th order Bandpass Filter Function", Proceedings of the Sixth European Conference on Circuit Theory and Design, Stuttgart, Germany, September 1983, pp. 504-506.

#### Reports:

1. A. Drosopoulos, "Design Description of Optical Reflectometer in MOSAIC systems", internal Nortel Report, 1999.
2. J. Harley and A. Drosopoulos, "Verification and Testing of AM in MOR systems", internal Nortel Report 1998.
3. M. M. Rey, A. Drosopoulos and D. Petrovic, "A Search Procedure for Ships in RADARSAT imagery", DREO Report No. 1305, 1996.
4. A. Drosopoulos, "Sea Surface Modeling and Simulation", DREO Report No. 1282, 1995.
5. A. Drosopoulos, "Description of the OHGR Database", DREO Tech Note 94-14, 1994.
6. A. Drosopoulos and G. Haslam, "Peak Detection of Swerling Type Targets. Part I: Detection Probabilities in White Noise", DREO Report No. 1193, 1993.
7. A. Drosopoulos, "Lake Huron 1987. MARS Database: Description and Calibration", CRL Report No. 256, 1992, McMaster U., Hamilton, Ontario, Canada.

#### Other:

1. A. Drosopoulos and S. Haykin, "Angle-of-Arrival Estimation in the Presence of Multipath", Chapter 1 in S. Haykin editor, "Adaptive Radar Signal Processing", Wiley, 2006.
2. A. Drosopoulos, "Electrical Circuits - A.C. - Textbook", A. Drosopoulos, 2006
3. A. Drosopoulos, "Electrical Circuits - D.C. - Textbook", A. Drosopoulos, 2005
4. A. Drosopoulos and S. Haykin, "Adaptive Radar Parameter Estimation with Thomson's Multiple- Window-Method", Chapter 7 in S. Haykin and A. Steinhardt, editors, "Adaptive Radar Detection and Estimation", Wiley, 1992.
5. A. Drosopoulos, "Investigation of Diffuse Multipath at low Grazing Angles", PhD Thesis, McMaster U., 1992.
6. A. Drosopoulos, "RF Sputtering and Characterization of LiNbO<sub>3</sub> Thin Films", MSc Thesis, McMaster U., 1986.