

MASOUD MOVAHHEDI

Associate Professor,
Department of Electrical Engineering,
<http://www.movahhedi.info>
Yazd University,
Pajooohesh Blvd, Yazd, Iran.
P.O. Box: 89151-741

Movahhedi@yazd.ac.ir

Office: +98 (353) 123 2509
Mobile: +98 912 201 4744

Education: **Ph.D.:** Sep. 2001-Sep. 2007, Communication/Electrical Engineering, Amirkabir University of Technology (Tehran Polytechnic), Tehran, Iran, GPA (out of 20): 17.5, Thesis: Implementation and Improvement of the Full-Wave Analysis and Global Modeling of Microwave/mm-Wave Active Devices and Circuits.
Supervisor: Prof. A. Abdipour.

Visiting Ph.D. Student: Dec. 2005-Sep. 2006, Institute for Microelectronics, Vienna University of Technology (TU Wien), Vienna, Austria.
Supervisor: Prof. S. Selberherr.

M.Sc.: Sep. 1998-Nov. 2000, Communication/Electrical engineering, Amirkabir University of Technology (Tehran Polytechnic), Tehran, Iran, GPA (out of 20): 17.25, Thesis: Design and Fabrication of a Log-Periodic Antenna for 1-12GHz Spectrum.
Supervisor: Prof. Tavakoli.

B.Sc.: Sep. 1994-Agu. 1998, Communication/Electrical engineering, Sharif University of Technology, Tehran, Iran, GPA (out of 20): 17.02, Thesis: Multi-Monitoring.
Supervisor: Dr. Vosughi-Vahdat.

Special Skills:

- Programming skills with Pascal, Basic, Fortran, C++ and Assembly.
- Software skills:
 - Electrical Engineering software: Advanced Design System (ADS 2008-Momentum), Ansoft HFSS, Microwave Office, CST Microwave Studio, Zeland IE3D, NEC.
 - General softwares: MATLAB, Maple V, Mathematica
- Design of Linear and Nonlinear Microwave/mm-wave Circuits (Active Devices).
- Design of Wideband Antennas (Log-Periodic, Spiral ...).
- Design of Microwave Passive Devices.
- Numerical methods in electromagnetic problems and solving of PDE's, Finite Difference (Time Domain) FD(TD) method , Finite Element Method (FEM), Moment method, Wavelets, Filter banks.
- Practical experience in Radio Direction Finding and Adaptive Beamforming (smart antennas).

Awards and Honors:

- Ranked 201st among 300,000 participants in the National University Entrance in Iran.
- Ranked 3rd among B.Sc. communication students, Sharif University of Technology, 1998.
- Ranked 1st among M.Sc. field communication students, AmirKabir University of Technology, 2000.
- Recipient of the GAAS-05 Fellowship sponsored by the GAAS Association to young graduate researcher for the paper presented at GAAS2005 conference.

- Honored and awarded as an Outstanding Student of Electrical Engineering Department, Amirkabir University of Technology, 2006 and 2007.

**Research
Interests:**

Electromagnetic Theory, Numerical Methods in Electromagnetics (Finite-Difference Time-Domain (FDTD) method, Finite-Element (Time-Domain) FE(TD) Method, Alternating-Direction Implicit FDTD (ADI-FDTD) Method, ADI-FETD Method, Perfectly Matched Layer FDTD (PML-FDTD) Method, Meshless (Meshfree) methods, Applied Electromagnetics, Wavelets and filter-bank Techniques in Electromagnetic problems, Design of Microwave and Millimeter Wave Integrated Circuits, Antennas, Interconnect Simulations, Semiconductor physics, Full-wave analysis, Global Modeling and Wave Propagation, EMC, RFID systems (antenna design), Metamaterials (MTMs) and their applications in antennas, microwave devices and sensors design.

**Current
Researches:**

- Implementation and improvement of the full-wave analysis of high-frequency active devices.
- Global modeling of high-frequency active circuits.
- Semiconductor equations.
- Computational Electromagnetics and Numerical Techniques in Electromagnetics
- Implementation of FETD method for electromagnetic problems.
- Application of ADI approach for FETD method.
- Implementation of PML for FETD method.
- Meshless methods in electromagnetics
- Using Metamaterials for improvement of microwave components and devices.
- Using Metamaterials in sensor design.
- Circularly polarized antenna design for RFID systems.
- Analysis of traveling wave tube (TWT) structures.
- Design and simulation of a high power magneto-hydro-dynamic (MHD) generator.
- Design, simulation and fabrication of dispersive delay lines (DDLs) for compressive receivers.
- Monopulse systems (Design of a wideband passive seeker), Design of a wideband circularly dual-polarized antenna and its feeding network.
- Metasurfaces

**Work
Experiences:**

- Design and fabrication of a high-gain microstrip array antenna in C-band
- (Spring/2002-Summer/2004, Zaeim Corp. Tehran, Iran) Research Engineer, R&D section, Signal Processing Group, Radio Direction Finding Project.
- (Fall/1999-Spring/2002, Intelligent Signal Processing Research Center, Tehran, Iran) research on my M.S. thesis and Design of Wideband antennas.
- (Spring/2002, Iran Telecommunication Research Center, Tehran, Iran) research on MMIC Technology.
- (Summer, Fall/1997, Sa-Iran, Tehran, Iran) research on my Bachelor's thesis.
- (September 2007, September 2013) Faculty member, Assistant Professor, Electrical Engineering Department, Shahid Bahonar University of Kerman.
- (September 2013, Present) Faculty member, Assistant Professor, Electrical and Computer Engineering Department, Yazd University.

**Professional
Membership**

Student member of IEEE, 2006-2007.
Member of IEEE, 2008-present.

Publications

Book Chapters:

- [1] Masoud Movahhedi and Rasool Keshavarz (2012). Coupled-Line Couplers Based on the Composite Right/Left-Handed (CRLH) Transmission Lines, *Trends in Electromagnetism - From Fundamentals to Applications*, Dr. Victor Barsan (Ed.), ISBN: 978-953-51-0267-0, InTech press.

Journal Papers:

- [1] A. Goudarzi, M. Movahhedi, M.-M. Honari, and R. Mirzavand, "Design of a Wideband Single-Layer Reflective Surface for a Circularly-Polarized Resonant Cavity Antenna," *International Journal of Electronics and Communications (AEÜ)*, vol. 129, no. 2, Article 153535, Feb. 2021.
- [2] H. Nazemi-Rafi and M. Movahhedi, "Substrate Integrated Waveguide (SIW) Dispersive Delay Structure Based on Wave Trapping," *IET Microwaves, Antennas & Propagation*, vol. 14, no. 15, pp. 2081-2087, Dec. 2020.
- [3] M. Momeni-Nasab, S. M. Bidoki, M. Hadizadeh, and M. Movahhedi, "Absorption Performance Investigation of Printed Transmission lines by the Ink-Jet Printing Method," to be published in the *Iranian Journal of Electrical and Computer Engineering* (in Persian).
- [4] A. Goudarzi, M. Movahhedi, M.-M. Honari, H. Saghlatoon, R. Mirzavand, and P. Mousavi, "Wideband High-Gain Circularly-Polarized Resonant Cavity Antenna with a Thin Complementary Partially Reflective Surfaces," *IEEE Transactions on Antennas & Propagation*, vol. 69, no. 1, pp. 532-537, Jan. 2021.
- [5] M. Momeni-Nasab, S. M. Bidoki, M. Hadizadeh, and M. Movahhedi, "Ink-Jet Printed Metamaterial Microwave Absorber Using Reactive Inks," *International Journal of Electronics and Communications (AEÜ)*, vol. 123, 153259, Aug. 2020.
- [6] M. Momeni-Nasab, S. M. Bidoki, M. Hadizadeh, and M. Movahhedi, "Fabrication of Electromagnetic waves Absorbing Materials by Ink-jet Printing Method," *Journal of Material Science: Materials in Electronics*, vol. 31, no. 9 pp. 7093-7099, May 2020.
- [7] H. Nazemi-Rafi and M. Movahhedi, "Dispersive Delay Structure Based on Interdigital Capacitors with Non-Commensurate Fingers," *IEEE Microwave and Wireless Components Letters*, vol. 29, no. 7, pp. 465-467, Jul. 2019.
- [8] H. Nazemi-Rafi and M. Movahhedi, "Dispersive Delay Structure Using Cascaded Coupled CRLH-CRLH C-Sections," *International Journal of RF and Microwave Computer-Aided Engineering*, vol. 29, no. 7, pp. 1-8, Jul. 2019.
- [9] N. Khakzar, A. Heidari, and M. Movahhedi, "An Unconditionally Stable Meshless Method for Solving 3-D Transient Electromagnetic Problems Based on LOD Scheme," *IET Science, Measurement & Technology*, vol. 13, no. 6, pp. 818-823, 2019.
- [10] M. Sabahi, A. Heidari, and M. Movahhedi, "A Compact CRLH Circularly Polarized Leaky-Wave Antenna Based on Substrate Integrated Waveguide," *IEEE Transactions on Antennas & Propagation*, vol. 66, no. 9, pp. 4407-4414, 2018.
- [11] K. Ramezani-Boldaji, M. Movahhedi and A. Ghafoorzadeh-Yazdi, "An Ultra Wide Bandpass Filter with Wide stop Band on Metamaterial Structures," *Tabriz Journal of Electrical Engineering*, vol. 49, no. 1, pp. 191-199, 2019 (in Persian).
- [12] S. Shams, A. Ghafoorzadeh-Yazdi, and M. Movahhedi, "A 3-D Dispersive Time-Domain Meshless Formulation for Frequency-Dependent Materials," *IEEE Transactions on Antennas & Propagation*, vol. 66, no. pp. 1040-1045, 2018.

- [13] E. Moradi, A.-R. Moznebi, K. Afrooz and M. Movahhedi, "Gysel Power Divider with Efficient Second and Third Harmonic Suppression Using One Resistor," *International Journal of Electronics and Communications (AEÜ)*, vol. 89, pp. 116-122, 2018.
- [14] E. Mehboodi, M. Movahhedi and A. Heidari, "Wideband Dual Polarized Stair Arm Width (SAW) Spiral Antenna for Monopulse System," *IET Microwaves, Antennas & Propagation*, vol. 12, no. 4, pp. 607-611, 2018.
- [15] E. Moradi, A.-R. Moznebi, K. Afrooz and M. Movahhedi, "Four-Way Gysel Power Divider/Combiner with Back-to-Back Configuration for Dual-Band Operation," *International Journal of Microwave and Wireless Technologies*, vol. 10, no. 2, pp. 265-270, 2018.
- [16] Z. Pourazad, A. A. Heidari and M. Movahhedi, "Design and Fabrication of a Quad-Band Filter Using Split Ring Resonators (SRR)," *Journal of Electronics Industries*, vol. 8, no. 3, pp. 101-110, 2017 (in Persian).
- [17] S. Shams and M. Movahhedi, "Unconditionally Stable Divergence-Free Vector Meshless Method Based on Crank-Nicolson Scheme," *IEEE Antennas and Wireless Propagation Letters*, vol. 16, no. 1, pp. 2671-2674, 2017.
- [18] S. Shams, A. Ghafoorzadeh-Yazdi, and M. Movahhedi, "Unconditionally Stable Divergence-Free Vector-Based Meshless Method for Transient Electromagnetic Analysis," *IEEE Transactions on Microwave Theory and Techniques*, vol. 65, no. 6, pp. 1929-1938, Jun. 2017.
- [19] M. Danaeian, M. Movahhedi, A. Hakimi, and K. Afrooz, "A Compact Ultra-Wideband Bandpass Filter with Sharp-Rejection using Complementary Split Ring Resonators," *Amirkabir International Journal of Science & Research - Electrical & Electronics Engineering (AIJ-EEE)*, vol. 48, no. 1, pp. 1-10, spring 2016.
- [20] S. S. Haghighi, A. Heidari, and M. Movahhedi, "A Three-Band Substrate Integrated Waveguide Leaky-Wave Antenna Based on Composite Right/Left Handed Structure," *IEEE Transactions on Antennas & Propagation*, vol. 63, no. 10, pp. 4578-4582, Oct. 2015.
- [21] A. Afsari, A. Heidari, and M. Movahhedi, "3D Meshless Simulation of Laser Ray Deviation under Thermal Lensing Effect," *International Journal of Numerical Modelling: Electronic Networks, Devices and Fields*, vol. 29, no. 3, pp. 407-416, 2016.
- [22] H. Nourmandi Pour and M. Movahhedi, "Design of Microstrip Lowpass Filter Using Delta Stub Based on Transfer Function Analysis," *International Journal of Engineering & Technology Sciences (IJETS)*, vol. 2, no. 5, pp. 420-432, Oct. 2014.
- [23] A. Afsari and M. Movahhedi, "An Adaptive Radial Point Interpolation Meshless Method for Simulation of Electromagnetic and Optical Fields," *IEEE Transactions on Magnetics*, vol. 50, no. 7, Article # 7200308, Jul. 2014.
- [24] A. Afsari, A. Chehrazi, and M. Movahhedi, "Toward a Computational Multiresolution Analysis for Radial Point Interpolation Meshless Method," *International Journal of Numerical Modelling: Electronic Networks, Devices and Fields*, vol. 28, no. 1, pp. 1-20, 2015.
- [25] F. Ansarizadeh and M. Movahhedi, "Unconditionally-Stable Meshless Methods Based on Different Split-Step Techniques and Their Phase Velocity Considerations," *Applied Computational Electromagnetics Society (ACES) Journal*, vol. 28, no. 9, pp. 788-794, Sep. 2013.

- [26] A. Afsari and M. Movahhedi, "Proposing a Wavelet Based Meshless Method for Simulation of Conducting Materials," *Progress in Electromagnetics Research M (PIER M)*, vol. 31, pp. 159-161, 2013.
- [27] A. Afsari and M. Movahhedi, "A Criterion for Selecting the Shape Functions in Electromagnetic Meshless Methods," *IET Science, Measurement & Technology*, vol. 7, no. 3, pp. 157-165, Jun. 2013.
- [28] H. Razmjoo and M. Movahhedi, "Unconditionally Stable Improved Meshless Methods for Electromagnetic Time-Domain Modeling," *International Journal for Computation and Mathematics in Electrical and Electronic Engineering (COMPEL)*, vol. 33, no. 1/2, pp. 463-482, Feb. 2014.
- [29] A. Nakhlestani, M. Movahhedi and A. Hakimi, "A Wideband Stepped-Impedance Rectangular-Ring Resonator Bandpass Filter with Multiple Notched Bands," to be published in *International Journal of Electronics*.
- [30] A. Afsari and M. Movahhedi, "A Modified Wavelet-Meshless Method for Lossy Magnetic Dielectrics at Microwave Frequencies," *IEEE Transactions on Magnetics*, vol. 49, no. 3, Mar. 2013.
- [31] H. Razmjoo, M. Movahhedi, A. Aminian, and T. Q. Bui "Photonics Bandgap Computations Using Novel Periodic Meshless Methods," *Applied Computational Electromagnetics Society (ACES) Journal*, vol. 27, no. 12, pp. 977-982, Dec. 2012.
- [32] R. Keshavarz and M. Movahhedi, "A Compact and Wideband Coupled-Line Coupler with High Coupling Level Using Shunt Periodic Stubs," to be published in *Radioengineering Journal*.
- [33] A. Nakhlestani, A. Hakimi and M. Movahhedi, "A Novel Configuration for UWB LNA Suitable for Low-Power and Low-Voltage Applications," *Microelectronics Journal*, vol. 43, no. 7, pp. 444-451, Jul. 2012.
- [34] H. Razmjoo, M. Movahhedi, and A. Hakimi, "An Improved Truly Meshless Method Based on a New Shape Function and Nodal Integration," *International Journal of Numerical Modelling: Electronic Networks, Devices and Fields*, vol. 25, no. 5-6, pp. 441-453, 2012.
- [35] R. Mirzavand, A. Abdipour, G. Moradi, and M. Movahhedi, "Global Modeling of Nonlinear Circuits Using the Finite-Difference Laguerre Time-Domain/Alternative Direction Implicit Finite-Difference Time-Domain Method with Stability Investigation," *International Journal of Numerical Modelling: Electronic Networks, Devices and Fields*, vol. 25, no. 4, pp. 400-412, 2012.
- [36] R. Mirzavand, A. Abdipour, G. Moradi, and M. Movahhedi, "Unconditionally Stable MFLTD Method for the Full Wave Electromagnetic Simulation," *IEEE Transactions on Antennas and Propagation*, vol. 60, no. 5, pp. 2583-2586, May 2012.
- [37] R. Mirzavand, A. Abdipour, W. Schilders, G. Moradi, and M. Movahhedi, "Locally One-Dimensional Finite-Difference Time-Domain Scheme for the Full-Wave Semiconductor Device Analysis," *IET Science, Measurement & Technology*, vol. 6, no. 2, pp. 78-84, Mar. 2012.
- [38] R. Keshavarz, M. Movahhedi, and A. Abdipour, "A Broadband and Compact Asymmetrical Backward Coupled-Line Coupler with High Coupling Level," *International Journal of Electronics and Communications (AEÜ)*, vol. 66, no. 7, pp. 569-574, Jul. 2012.

- [39] R. Mirzavand, A. Abdipour, G. Moradi, and M. Movahhedi, "Meshless Physical Simulation of Semiconductor Devices Using a Wavelet-Based Node Generator," *IEICE Electronics Express*, vol. 8, no. 21, pp. 1757-1762, Nov. 2011.
- [40] H. Bameri, A. Hakimi, and M. Movahhedi, "A Linear-High Rang Output Power Control Technique for Cascode Power Amplifiers," *Microelectronics Journal*, vol. 42, no. 9, pp. 1025-1031, 2011.
- [41] H. Razmjoo, M. Movahhedi, and A. Hakimi, "A Modification on a Fast Meshless Method for Electromagnetic Field Computations," *IET Science, Measurement & Technology*, vol. 5, no. 5, pp. 175-182, Sep. 2011.
- [42] R. Mirzavand, A. Abdipour, G. Moradi, and M. Movahhedi, "CFS-PML Implementation for the Unconditionally stable FDLTD Method," *Journal of Electromagnetic Waves and Applications (JEMWA)*, vol. 25, no. 5-6, pp. 879-888, 2011.
- [43] R. Keshavarz, M. Movahhedi, A. Hakimi, and A. Abdipour, "A Novel Broad Bandwidth and Compact Backward Coupler with High Coupling-Level," *Journal of Electromagnetic Waves and Applications (JEMWA)*, vol. 25, no. 2-3, pp. 283-293, 2011.
- [44] R. Mirzavand, A. Abdipour, G. Moradi, and M. Movahhedi, "Full-wave Semiconductor Devices Simulation using Meshless and FDTD approaches," *IET Microwaves, Antennas & Propagation*, vol. 5, no. 6, pp. 685-691, 2011.
- [45] R. Mirzavand, A. Abdipour, G. Moradi, and M. Movahhedi, "Full-Wave Semiconductor Devices Simulation Using ADI-FDTD Method," *Progress in Electromagnetics Research M*, vol. 11, pp. 191-202, 2010.
- [46] H. Razmjoo, M. Movahhedi, and A. Hakimi, "An Efficient Meshless Method Based on a New Shape Function," *International Journal of Numerical Modelling: Electronic Networks, Devices and Fields*, vol. 23, no. 6, pp. 503-521, 2010.
- [47] K. Afrooz, A. Abdipour, A. Tavakoli, and M. Movahhedi, "Time-Domain Analysis of Lossy Active Transmission Lines Using FDTD Method," *International Journal of Electronics and Communications (AEÜ)*, vol. 63, no. 3, pp. 168-178, March 2009.
- [48] M. Movahhedi and A. Abdipour, "Complex Frequency Shifted-Perfectly Matched Layer for the Finite-Element Time-Domain Method," *International Journal of Electronics and Communications (AEÜ)*, vol. 63, no. 1, pp. 72-79, January 2009.
- [49] K. Afrooz, A. Abdipour, A. Tavakoli, and M. Movahhedi, "A Nonlinear and Fully Distributed FET Modeling Procedure Using Time Domain Method," *IET Microwaves, Antennas & propagation*, vol. 2, no. 8, pp. 886-897, December 2008.
- [50] K. Afrooz, A. Abdipour, A. Tavakoli, and M. Movahhedi, "Time-Domain Analysis of Active Transmission Line Using FDTD Techniques (Application to Microwave/mm-Wave Transistors)," *Progress in Electromagnetic Research, PIER 77*, pp. 309-328, 2007.
- [51] M. Movahhedi, A. Abdipour, A. Nentchev, M. Dehghan, and S. Selberherr, "Alternating-Direction Implicit Formulation of the Finite-Element Time-Domain Method" *IEEE Transactions on Microwave Theory and Techniques*, vol. 55, no. 6, pp. 1322-1331, June 2007.
- [52] M. Movahhedi, A. Abdipour, H. Ceric, A. Sheikholeslami, and S. Selberherr, "Optimization of the Perfectly Matched Layer for the Finite-Element Time-Domain Method," *IEEE Microwave and Wireless Components Letters*, vol. 17, no. 1, pp. 10-12, January 2007.

- [53] M. Movahhedi, A. Abdipour, “Efficient Numerical Methods for Simulation of High-Frequency Active Devices,” *IEEE Transactions on Microwave Theory and Techniques*, vol. 54, no. 6, pp. 2636-2645, June 2006.
- [54] M. Movahhedi, A. Abdipour, and M. Dehghan, “Accelerating the Transient Simulation of Semiconductor Devices Using Filter-Bank Transforms,” *International Journal of Numerical Modelling: Electronic Networks, Devices and Fields*, vol. 19, no. 1, pp. 47-67, 2006.

Conference Papers:

- [1] S. Shams and M. Movahhedi, “Dispersive Divergence-Free Vector Meshless Method for Time-Domain Analysis of Frequency-Dependent Media,” in proceedings of the *Asia-Pacific Microwave Conference (APMC 2020)*, Hong Kong, December 2020.
- [2] M. Momeni-Nasab, S. M. Bidoki, M. Hadizadeh, and M. Movahhedi, “Fabrication of Electricity Conductor Designs on Paper Using Silver Nano-particles Created by the Ink-Jet Printing Method,” in proceedings of the *4th National Conference and Workshop on Nano Science and Technology (NCWNN 1398)*, Yazd, Iran, August 2019 (in Persian).
- [3] S. Abdollahi, Z. Zeinalpour, and M. Movahhedi, “Performance Improvement of Heterogeneous Networks Using mm-Wave,” in proceedings of the *27th Iranian Conference on Electrical Engineering (ICEE 2019)*, Yazd, Iran, April-May 2019 (in Persian).
- [4] S. Ramezani, M. Movahhedi, and M. Javanbakht, “Broadband Tonpiz Transducer Based on Two Holes in the Head Mass,” in proceedings of the *27th Iranian Conference on Electrical Engineering (ICEE 2019)*, Yazd, Iran, April-May 2019 (in Persian).
- [5] P. Safaie, M. Movahhedi, and A. Ghafoorzadeh-Yazdi, “A Systematic Method to Design Desired Wideband 180° Couplers,” in proceedings of the *27th Iranian Conference on Electrical Engineering (ICEE 2019)*, Yazd, Iran, pp. 1245-1248, April-May 2019.
- [6] P. Rahmatian, E. Moradi, M. Movahhedi, and A. Heidari, “Single Notch Band UWB Off-Body Wearable Antenna with Full Ground Plane,” in proceedings of the *27th Iranian Conference on Electrical Engineering (ICEE 2019)*, Yazd, Iran, pp. 1228-1232, April-May 2019.
- [7] P. Rahmatian, M. Movahhedi, and A. Ghafoorzadeh-Yazdi, “Dual-Band Dual-Mode Wearable Antenna for On-Off Body Communication Based on Metamaterial,” in proceedings of the *26th Iranian Conference on Electrical Engineering (ICEE 2018)*, Mashhad, Iran, pp. 649-653, May 2018.
- [8] H. Esmaeilzade, M. Movahhedi, K. Ramezani, and A. Ghafoorzadeh-Yazdi, “An UWB Quadrature Power Divider by Using a Phase Shifter Based on Microstrip-Slot Transition,” in proceedings of the *4th National Conference on Development of Civil Engineering, Architecture, Electricity and Mechanical in Iran*, Gorgan, Iran, December 2016 (in Persian).
- [9] T. Keyhanpour, A. Heidari, and M. Movahhedi, “A CPW-Fed Monopole Based Circularly Polarized ZOR Antenna,” in proceedings of the *25th Iranian Conference on Electrical Engineering (ICEE 2017)*, Tehran, Iran, pp. 1955-1960, 2017.
- [10] S. Shams, A. Ghafoorzadeh-Yazdi, and M. Movahhedi, “A Novel Explicit Vector Meshless Method for Improving the Stability of the Conventional Vector Meshless Method,” in proceedings of the *5th International Conference on Research in Science and Technology (5RST)*, London, England, November 2016.

- [11] E. Shoieb, A. Ghafoorzadeh-Yazdi, M. Movahhedi, J. Nourinia, B. Mohammadi, N. Valizadeh, "A Novel Design of UWB BPF Using CSRR-DGS with Band-Rejection Performance Based on Coupled Wave Canceller SIR with High Skirt Selectivity," in proceedings of the *First International Conference on New Research Achievements in Electrical and Computer Engineering*, Tehran, Iran, May 2016.
- [12] H. Gholamalinezhad, A. Ghafoorzadeh-Yazdi and M. Movahhedi, "Graphene and its Applications in Antenna Systems," in proceedings of the *Fourth Iranian National Conference on Engineering Electromagnetics (ICEEM 2016)*, Nowshahr, Iran, April 2016, pp. 1-5 (in Persian).
- [13] E. Mehboodi, M. Movahhedi and A. A. Heidari, "Wideband Dual Polarized Stair Arm Width Spiral Antenna for Monopulse System," in proceedings of the *Fourth Iranian National Conference on Engineering Electromagnetics (ICEEM 2016)*, Nowshahr, Iran, April 2016, pp. 1-5 (in Persian).
- [14] A. Akbar, M. Movahhedi, T. Keyhanpoor and A. Ghafoorzadeh-Yazdi, "Dispersive Delay Line Structure Using Composite Right/Left Handed (CRLH) for High Frequency Resolution in Analog Signal Processing (ASP)," in proceedings of the *Fourth Iranian*
- [15] T. Keyhanpoor, A. A. Heidari and M. Movahhedi, "Compact CPW Antenna Zero-Order Resonant with Enhanced Bandwidth," in proceedings of the *Fourth Iranian National Conference on Engineering Electromagnetics (ICEEM 2016)*, Nowshahr, Iran, April 2016, pp. 1-5 (in Persian).
- [16] Z. Pourazad, A. A. Heidari and M. Movahhedi, "Design of a New Quad-Band Filter Using Split Ring Resonators (SRR)," in proceedings of the *Fourth Iranian National Conference on Engineering Electromagnetics (ICEEM 2016)*, Nowshahr, Iran, April 2016, pp. 1-5 (in Persian).
- [17] N. Khakzar, A. A. Heidari and M. Movahhedi, "Proposing an Unconditionally Stable Time-Domain Meshless Method for Solving 3-D Maxwell's Equations," in proceedings of the *Fourth Iranian National Conference on Engineering Electromagnetics (ICEEM 2016)*, Nowshahr, Iran, April 2016, pp. 1-5 (in Persian).
- [18] H. Heidarifard, M. Nakhkash and M. Movahhedi, "Improvement of a Dual-Band Compact Planar Patch Antenna Used in Microwave Imaging System," in proceedings of the *Fourth Iranian National Conference on Engineering Electromagnetics (ICEEM 2016)*, Nowshahr, Iran, April 2016, pp. 1-5 (in Persian).
- [19] S. Shams, A. Ghafourzadeh-Yazdi, and M. Movahhedi, "Unconditionally Stable Vector-Based Meshless Method for Transient Electromagnetic Analysis," in proceedings of the *24th Iranian Conference on Electrical Engineering (ICEE 2016)*, Shiraz, Iran, pp.1-5.
- [20] E. Mehboodi, M. Movahhedi, and A. Heidari, "Modulated Arm Width (MAW) Log-Periodic Antenna with Dual Circular Polarization for Monopulse Systems," in proceedings of the *24th Iranian Conference on Electrical Engineering (ICEE 2016)*, Shiraz, Iran, pp. 1-5 (in Persian).
- [21] M. M. Sabahi, A. Heidari, and M. Movahhedi, "Leaky Wave Antenna with Circular Polarization Based on Composite Right/Left Handed (CRLH) Transmission Line," in proceedings of *23th Iranian Conference on Electrical Engineering (ICEE 2015)*, Tehran, Iran (in Persian).
- [22] E. Moradi, K. Afrooz, and M. Movahhedi, "Design and Simulation of a Microwave Power Divider with Compact Size and Arbitrary Power Division Ratio for High Power Applications," in proceedings of the *9th Symposium on Advances in Science and Technology (9thSASTech)*, Mashad, Iran, Jan. 2015 (in Persian).

- [23] S. Banaei, M. Movahhedi, and K. Afrooz, "Design and Simulation of an Ultra-Wideband Phase Shifter," in proceedings of the *Second National Conference on Electrical, Mechanical and Mechatronic*, Tehran, Iran, Feb. 2015 (in Persian).
- [24] Z. Barami, A. Ghafoorzadeh, and M. Movahhedi, "Design and Analysis of a Quadrature Hybrid Coupler in Terahertz Frequency Band Based on EBG Waveguide Structure," in proceedings of the *22nd Iranian Conference on Electrical Engineering (ICEE 2014)*, Tehran, Iran, May 2014 (in Persian).
- [25] S. S. Haghighi, A. Heidari, and M. Movahhedi, "Leaky Wave Antenna Based on Left Handed Substrate Integrated Waveguide Using Circular Slots," in proceedings of the *22nd Iranian Conference on Electrical Engineering (ICEE 2014)*, Tehran, Iran, May 2014, pp. 2188-2193 (in Persian).
- [26] S. S. Haghighi, A. A. Heidari and M. Movahhedi, "A Leaky-Wave Antenna Based on Surface Integrated Waveguide (SIW) on CRLH Substrate Using Circular Slots," in proceedings of the *Second Iranian Conference on Engineering Electromagnetics (ICEEM 2014)*, Tehran, Iran, January 2014, pp. 168-176 (in Persian).
- [27] A. Afsari and M. Movahhedi, "A New Basis Function for Fast Computation of Electromagnetic Fields in Meshless Frames," in proceedings of the *19th COMPUMAG Conference on the Computation of Electromagnetic Fields*, Budapest, Hungary, July 2013.
- [28] A. Afsari and M. Movahhedi, "An Adaptive Basis Function for Meshless Simulation of Quantum Wave Packets at Optical Frequencies," in proceedings of the *IEEE International Microwave Symposium (IMS 2013)*, Seattle, WA, June 2013.
- [29] M. Alibakhshi-Kenari, M. Movahhedi, and H. Hakimi, "Compact and Ultra Wideband Planar Antenna Based on the Composite Right-Left Handed Transmission Line Accompanying Improvement," in proceedings of the *First Iranian Conference on Electromagnetic Engineering (ICEME 2012)*, Tehran, Iran, December 2012.
- [30] A. Afsari and M. Movahhedi, "Proposing a Wavelet Based Meshless Method for Simulation of Magnetic Materials," in proceedings of the *Latin American Workshop on Magnetism, Magnetic Materials and Their Applications (X-LAW3M 2013)*, Buenos Aires, Argentina, April 2013.
- [31] M. Alibakhshi-Kenari, H. Naderian and M. Movahhedi, "A New Miniature Ultra-Wide Band Planar Microstrip Antenna Based on the Metamaterial Transmission Line," in proceedings of *IEEE Asia-Pacific Conference on Applied Electromagnetics (APACE 2012)*, Melaka, Malaysia, December 2012, pp. 293-297.
- [32] A. Afsari, M. Movahhedi and M. Barkhordari-Yazdi, "Proposing the Frequency Dependent Shape Functions for Meshless Method in Electromagnetics," in proceedings of *Asia-Pacific Microwave Conference (APMC 2012)*, Kaohsiung, Taiwan, December 2012, pp. 1313-1315.
- [33] A. Afsari and M. Movahhedi, "A Modified Wavelet-Based Meshless Method for Lossy Magnetic Dielectrics at Microwave Frequencies," in proceedings of *IEEE International Conference on Microwave Magnetics (ICMM 2012)*, Kaiserslautern, Germany, August 2012.
- [34] A. Afsari, M. Movahhedi and M. Barkhordari-Yazdi, "Proposing the Frequency Dependent Shape Functions for Meshless Method in Electromagnetics," in proceedings of *Asia-Pacific Microwave Conference (APMC 2012)*, Kaohsiung, Taiwan, December 2012.

- [35] M. Alibakhshi-Kenari, H. Naderian and M. Movahhedi, "A New Miniature Ultra-WideBand Planar Microstrip Antenna Based on the Metamaterial Transmission Line," in proceedings of *IEEE Asia-Pacific Conference on Applied Electromagnetics (APACE 2012)*, Melaka, Malaysia, December 2012.
- [36] A. Nakhlestani, M. Movahhedi, and A. Hakimi, "A Novel Wideband Stepped-Impedance Rectangular-Ring Resonator Bandpass Filter with Two Notched Bands," in proceedings of *IEEE International Microwave Symposium (IMS 2012)*, Montreal, Canada, June 2012.
- [37] H. Naderian, A. Hakimi, and M. Movahhedi, "A Wideband Low-Noise Down conversion Mixer with Positive-Negative Feedbacks," in proceedings of *20th Iranian Conference on Electrical Engineering (ICEE 2012)*, Tehran, Iran, May 2012.
- [38] H. Razaghian, M. Movahhedi, and A.-A. Heidari, "An Antenna with Circular Polarization for Passive Tag of UHF RFID System," in proceedings of *Passive Surveillance Systems Conference (PSSC 2011)*, Shiraz, Iran, December 2011 (in Persian).
- [39] M. Danaeian, M. Movahhedi, and A. Abdipour, "A Compact Ultra-Wideband Bandpass Filter with Sharp Rejections and a Single Sharp Notch Band Using Metamaterial structures," in proceedings of *Passive Surveillance Systems Conference (PSSC 2011)*, Shiraz, Iran, December 2011 (in Persian).
- [40] M. Danaeian, M. Movahhedi, and A. Abdipour, "Ultra-Wideband Bandpass Filter Using Complementary Split Ring Resonators (CSRRLs) and Microstrip Ring," in proceedings of *Passive Surveillance Systems Conference (PSSC 2011)*, Shiraz, Iran, December 2011 (in Persian).
- [41] M. Salari and M. Movahhedi, "A New Configuration for Circularly Polarized Waveguide Slot Antenna," in proceedings of *Asia-Pacific Microwave Conference (APMC 2011)*, Melbourne, Australia, December 2011, pp. 606-609.
- [42] H. Razmjoo, M. Movahhedi, and A. Hakimi, "Electromagnetic Time Domain Modeling Using an Improved Meshless Method," in proceedings of the *IEEE International Microwave Symposium (IMS 2011)*, Baltimore, Maryland, June 2011.
- [43] R. Keshavarz, M. Danaeian, M. Movahhedi, and A. Hakimi, "A Compact Dual-Band Branch-Line Coupler Based on the Interdigital Transmission Line," in proceedings of the *19th Iranian Conference on Electrical Engineering (ICEE 2011)*, Tehran, Iran, May 2011.
- [44] R. Keshavarz, M. Movahhedi, and A. Hakimi, "A Compact and Broadband Backward Coupler with High Coupling-Level Based on Composite Right/Left - Handed Transmission Lines," in proceedings of the *19th Iranian Conference on Electrical Engineering (ICEE 2011)*, Tehran, Iran, May 2011.
- [45] M. Salari and M. Movahhedi, "A New Circularly Polarized Waveguide Slot Antenna," in proceedings of the *19th Iranian Conference on Electrical Engineering (ICEE 2011)*, Tehran, Iran, May 2011 (in Persian).
- [46] R. Mirzavand, A. Abdipour, G. Moradi, and M. Movahhedi, "FDLTD method for the Physical Simulation of Microwave FET Transistor," in proceedings of the *19th Iranian Conference on Electrical Engineering (ICEE 2011)*, Tehran, Iran, May 2011.
- [47] Z. Zare, A. Hakimi, F. Sheikhhosseini, and M. Movahhedi, "Preamplifier Effect on the Performance of Distributed Active Mixer," in proceedings of the *IEEE Asia Pacific Conference on Circuits and Systems (APCCAS 2010)*, Kuala Lumpur, Malaysia, December 2010, pp. 600-603.

- [48] R. Keshavarz, M. Movahhedi, and A. Hakimi, "Compact 0-dB Coupled-Line Forward Coupler by Loading with Shunt Periodic Stubs," in proceedings of the *Asia-Pacific Microwave Conference (APMC 2010)*, Yokohama, Japan, December 2010, pp. 1248-1251.
- [49] H. Razmjoo, M. Movahhedi, and A. Hakimi, "Improved Meshless Method Using Direct Shape Function for Computational Electromagnetics," in proceedings of the *Asia-Pacific Microwave Conference (APMC 2010)*, Yokohama, Japan, December 2010, pp. 2157-2160.
- [50] R. Mirzavand, A. Abdipour, G. Moradi, and M. Movahhedi, "ADI-FDTD Method for Physical Simulation of Semiconductor Devices," in proceedings of the *18th International Conference on Microwave, Radar and Wireless Communications (MIKON 2010)*, Vilnius, Lithuania, June 2010, pp. 1-4.
- [51] R. Mirzavand, A. Abdipour, G. Moradi, W.H.A. Schilders, and M. Movahhedi, "LOD-FDTD Method for Physical Simulation of Semiconductor Devices," in proceedings of the *7th International Conference on Microwave and Millimeter Wave Technology (ICMMT 2010)*, Chengdu, China, May 2010, pp. 1321-1324.
- [52] Z. Zare, A. Hakimi, F. Sheikhasani, and M. Movahhedi, "The Effect of Preamplifiers on the Performance of the Ultra-Wideband Active Mixers," in proceedings of the *18th Iranian Conference on Electrical Engineering (ICEE 2010)*, Isfahan, Iran, May 2010, pp. 1036-1041 (in Persian).
- [53] H. Bameri, A. Hakimi, M. Movahhedi, and H. Abdollahi, "A DC to 20 GHz Ultra-Broadband High-Gain-Linear Distributed Power Amplifier with 19.5% Drain Efficiency," in proceedings of the *18th Iranian Conference on Electrical Engineering (ICEE 2010)*, Isfahan, Iran, May 2010, pp. 409-412.
- [54] H. Razmjoo, M. Movahhedi, and A. Hakimi, "An Efficient Meshless Method Using a New Shape Function for Electromagnetic Problems," in proceedings of the *18th Iranian Conference on Electrical Engineering (ICEE 2010)*, Isfahan, Iran, May 2010, pp. 3416-3421 (in Persian).
- [55] R. Mirzavand, A. Abdipour, G. Moradi, and M. Movahhedi, "A Meshless Method for Physical Simulation of Semiconductor Devices," in proceedings of the *Asia-Pacific Microwave Conference (APMC 2009)*, Singapore, December 2009, pp. 1671-1674.
- [56] R. Mirzavand, A. Abdipour, G. Moradi, and M. Movahhedi, "A Semi-Implicit Meshless Method for Physical Simulation of Semiconductor Devices," in proceedings of the *7th International Conference of Numerical Analysis and Applied Mathematics (ICNAAM 2009)*, Crete, Greece, September 2009.
- [57] K. Afrooz, A. Abdipour, A. Tavakoli, and M. Movahhedi, "GaAs MESFETs Optimization Based on Fully Distributed Model for UWB Application," in proceedings of the *IEEE Applied Electromagnetics Conference (AEMC 2007)*, Kolkata, India, December 2007.
- [58] K. Afrooz, A. Abdipour, A. Tavakoli, and M. Movahhedi, "Time Domain Analysis of Lossy Nonuniform Transmission Line Using FDTD Technique," in proceedings of the *Asia-Pacific Conference on Applied Electromagnetics (APACE 2007)*, Melaka, Malaysia, December 2007, pp. 1-5.
- [59] K. Afrooz, A. Abdipour, A. Tavakoli, and M. Movahhedi, "FDTD Analysis of Small Signal Model for GaAs MESFETs Based on Three Line Structure," in proceedings of the *Nineteenth Asia-Pacific Microwave Conference (APMC 2007)*, Bangkok, Thailand, December 2007, pp. 1-4.

- [60] M. Movahhedi, A. Nentshev, H. Ceric, A. Abdipour, S. Selberherr, "A Finite Element Time-Domain Algorithm Based on the Alternating-Direction Implicit Method," in proceedings of the 36th European Microwave Conference (EuMC2006), Manchester, UK, September 2006, pp. 1-4.
- [61] M. Movahhedi, A. Abdipour, "Improvement of Active Microwave Device Modeling Using Filter Bank Transforms," in proceedings of the 35th European Microwave Conference (EuMC2005), Paris, France, October 2005, pp. 1113-1117.
- [62] M. Movahhedi, A. Abdipour, "Accelerating the Transient Simulation of Semiconductor Devices Using Filter-Bank Transforms," in proceedings of the 13th European Gallium Arsenide and other Compound Semiconductors Application Symposium (GAAS2005), Paris, France, October 2005, pp. 477-480.
- [63] M. Movahhedi, A. Abdipour, "Semiconductor Device Simulation Using Filter Bank Transforms," in proceedings of the IEEE International Conference on Semiconductor Electronics (ICSE 2004), Malaysia, December 2004, pp. 264-267.
- [64] Y. Soltani Mohammadi, M. Movahhedi, A. Abdipour, A. Mohammadi, "Wavelet Based Non-uniform Mesh Generation for Simulation Time Reduction of Semiconductor Device Modeling," in proceedings of the IEEE International Conference on Semiconductor Electronics (ICSE 2004), Malaysia, December 2004, pp. 286-290.
- [65] M. Movahhedi, A. Tadaion, A. Aref, "A Novel Approach to Radio Direction Finding and Detecting the Number of Sources Simultaneously: DMSAE Algorithm," in proceedings of the 34th European Microwave Conference (EuMC2004), Amsterdam, the Netherlands, October 2004, pp.745-748.
- [66] M. Movahhedi, A. Abdipour, "A Wavelet-Based Approach to Analyze the Electromagnetic Wave Effects on Microwave Transistors," in proceedings of the 10th International Conference on Mathematical Methods in Electromagnetic Theory (MMET*04), Ukraine, September 2004, pp. 402-405.
- [67] M. Movahhedi, A. Abdipour, "Wavelet-Based Grid Generation Toward Full-Wave Physical Analysis of Microwave/mm-wave Transistors," in proceedings of the 4th International Conference on Microwave and Millimeter Wave Technology (ICMMT2004), Beijing, China, August 2004, pp. 433-436.
- [68] M. Movahhedi, A. Tavakoli, R. Moini, "A Reflector Antenna Log-Period Feed for 1-10GHz Frequency Range," in proceedings of the 15th International Conference on Microwaves, Radar and Wireless Communications (MIKON-2004), Poland, May 2004, pp. 485-488.
- [69] M. Movahhedi, A. Abdipour, "The Influence of The MESFET Physical Parameters on the Equivalent Circuit Elements Based on the Physical Analysis," in proceedings of the 12th Iranian Conference on Electrical Engineering (ICEE 2004), Mashhad, Iran, May 2004 (in Persian).
- [70] M. Movahhedi, A. Tadaion, "A New Method to Radio Direction Finding and Detecting the Number of Sources with Different Power Levels," in proceedings of the 11th Iranian Conference on Electrical Engineering (ICEE 2003), Shiraz, Iran, May 2003 (in Persian).

**Supervised
MSc Theses:**

- **Hooman Razmjoo** (Supervisor: Dr. Movahhedi, Advisor: Dr. Hakimi), Thesis Title: Meshless methods for electromagnetics simulations, Graduated: Jan. 2011.

- **Rasool Keshavarz** (Supervisor: Dr. Movahhedi, Advisor: Dr. Hakimi), Thesis Title: Metamaterial and its applications in microwave and mm-wave circuits design, Graduated: Jan. 2011.
- Hadi Bameri (Advisor: Dr. Movahhedi, Supervisor: Dr. Hakimi), Thesis Title: , Graduated: Jan. 2011.
- Zahra Zare (Advisor: Dr. Movahhedi, Supervisor: Dr. Hakimi), Thesis Title: , Graduated: Jan. 2011.
- **Hamed Razaghian** (Supervisor: Dr. Movahhedi, Advisor: Dr. Hakimi), Thesis Title: Circularly Polarized Passive UHF RFID Tag Antenna Design with Optimum Dimensions, Graduated: Jan. 2012.
- **Mostafa Danaeian** (Supervisor: Dr. Movahhedi, Advisor: Dr. Hakimi), Thesis Title: Microwave Ultra Wide-Band (UWB) Filter Design Based on Metamaterial Transmission Lines, Graduated: Jan. 2012.
- **Ali Aminian** (Supervisor: Dr. Movahhedi, Advisor: Dr. Hakimi), Thesis Title: Time Domain Computational Electromagnetics Using Meshless Methods, Graduated: Sep. 2012.
- Amir Nakhlestani (Advisor: Dr. Movahhedi, Supervisor: Dr. Afrooz), Thesis Title: , Graduated: Jan. 2012.
- **Arman Afsari** (Supervisor: Dr. Movahhedi, Advisor: Dr. Afrooz), Thesis Title: Numerical Solution of Time-Domain Electromagnetic Problems Using a Combination of Direct Meshless Method and Absorbing Boundary Conditions, Graduated: Jan. 2013.
- **Mohammad Alibakhshi-Kenari** (Supervisor: Dr. Movahhedi, Advisor: Dr. Hakimi), Thesis Title: Design and Fabrication of the Ultra Squeeze and Ultra Wide Band Antennas Based on Composite Right/Left Handed (CRLH) Transmission lines, Graduated: Jan. 2013.
- **Fatemeh Ansarizadeh** (Supervisor: Dr. Movahhedi, Advisor: Dr. Hakimi), Thesis Title: Using Meshless Methods for Solving Time-Domain Electromagnetic Problems Concentrating on Their Stability Consideration, Graduated: Jan. 2013.
- Hadi Naderian (Advisor: Dr. Movahhedi, Supervisor: Dr. Hakimi), Thesis Title: , Graduated: Jan. 2013.
- Maryam Fatehi (Advisor: Dr. Movahhedi, Supervisor: Dr. Hakimi), Thesis Title: Meshless Methods for Electromagnetic Analysis of Periodic Structures, Graduated: Jan. 2013
- **Sajad Bakhshi** (Supervisor: Dr. Movahhedi, Advisor: Dr. Afrooz), Thesis Title: Electromagnetic Absorbing Boundary Condition in Meshless Methods, Graduated: Jan. 2014
- **Hossein Davari** (Supervisor: Dr. Movahhedi, Advisor: Dr. Hakimi), Thesis Title: Multi-Band Matching Circuit Design Using Composite Right/Left Handed (CRLH) Transmission lines, Graduated: Jan. 2014.
- **Neda Saify** (Supervisor: Dr. Movahhedi, Advisor: Dr. Afrooz), Thesis Title: Dual-Band Branch Line Coupler Based on Metamaterials Structures, Graduated: Jan. 2014.
- Isa Jamaladdini (Advisor: Dr. Movahhedi, Supervisor: Dr. Hakimi), Thesis Title: Analysis and Design of an Ultra Wideband (UWB) Low Noise Amplifier with High Linearity, Graduated: Jan. 2014.

- Maryam Bazafkan (Advisor: Dr. Movahhedi, Supervisor: Dr. Hakimi), Thesis Title: , Graduated: Jan. 2014.
- **Elham Moradi** (Supervisor: Dr. Movahhedi, Advisor: Dr. Afrooz), Thesis Title: Design, Simulation and fabrication of a Microwave Power Combiner/Divider for High Power Applications, Graduated: Jan. 2015.
- **Reza Mahmoodi** (Supervisor: Dr. Movahhedi, Advisor: Dr. Hakimi), Thesis Title: Simulation of the Interaction of beam and fields in Slow Wave Structures for Traveling Wave Tubes (TWTs) with Coupled Cavities by PIC Method, Graduated: Jan. 2015.
- **Saeede Banaie** (Supervisor: Dr. Movahhedi, Advisor: Dr. Afrooz), Thesis Title: Design and simulation of a wideband 180 Hybrid Coupler, Graduated: Jan. 2015.
- Elham Shoeib (Supervisor: Dr. Ghafoorzadeh, Advisor: Dr. Movahhedi), Thesis Title: , Graduated: Feb. 2015.
- Mohammad Mahdi Sabahi (Supervisor: Dr. Heidari, Advisor: Dr. Movahhedi), Thesis Title: Design and Simulation of Substrate Integrated Waveguide (SIW) Leaky-Wave Antennas Based on Composite Right/Left Handed (CRLH) Transmission Lines, Graduated: Feb. 2015.

References:

Available upon request.