

Mohammad Mojahedi

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BACKGROUND INFORMATION

Education

Ph.D. in Electrical Engineering (optoelectronics)

University of New Mexico 1999.

M.S. in Electrical Engineering (optoelectronics)

University of New Mexico 1995.

B.S. in Electrical Engineering

University of New Mexico 1991.

Experience

August 2001 to
Present

Assistant Professor: Department of Electrical and Computer Engineering, University of Toronto. Original date of appointment as Assistant Professor: August 8, 2001.

February 2000
to Jun 2001

Research Assistant Professor: Center for High Technology Materials, Department of Electrical and Computer Engineering at the University of New Mexico. Taught and conducted research in collaboration with the Department of Physics at the University of California at Berkeley.

November 1995
to December 1999

Student Research Assistant: Worked toward my Ph.D. degree with Professor Kevin J. Malloy. Dissertation title: "Superluminal Group Velocities and Structural Dispersion."

October 1990
to November 1995

Student Research Assistant: Worked toward my M.S. degree with Professor Marek Osinski. Thesis title: "Determination of Effective Mass Hamiltonian for Heterojunctions with Abrupt Interfaces."

January 1990
to August 1990

Laboratory Technical Assistance: Worked at the Department of Chemical & Nuclear Engineering at the University of New Mexico. Responsible for automating laboratories.

HONORS AND PROFESSIONAL ACTIVITIES

- Recipient of the Popejoy award for the outstanding doctoral dissertation in Physics and Engineering in the University of New Mexico during 1997-2000.
- Graduated with distinction from the Master program in Electrical Engineering.
- Honor Roll, College of Engineering, 1989-1990.

- Who's Who Among Students In American Universities & Colleges, 1992.
- Member of IEEE and OSA.
- Research work was featured in Albuquerque Journal, November 19, 2000.

RESEARCH FUNDING

Canadian Funds

PI or CI*	Title	Status	Source	Amount	% Share	Grant Period
PI	Composite Materials with an Effective Negative Index of Refraction	Hold	NSERC Research Grant	\$37,038 \$37,038 \$37,038 \$37,038	100%	2001-2002 2002-2003 2003-2004 2004-2005
PI	Abnormal Velocities in Linear Causal Media	Hold	Connaught Fund	\$5,000 \$5,000	100%	2001-2002 2002-2003
PI	Start up Grant**	Hold	Dep. of ECE-UofT	\$100,000	100%	2001-Open
CI+1† PI: Stewart Aitchison	Infrastructure for the study of photonic, microwave and high speed electronic	Hold	Canada Foundation for Innovation	\$344,970	50%	2002-2003
CI+1 PI: Stewart Aitchison	Infrastructure for the study of photonic, microwave and high speed electronic	Hold	Ontario Innovation Trust	\$344,970	50%	2002-2003
CI+1 PI: Stewart Aitchison	Infrastructure Operating Fund	Hold	Canada Foundation for Innovation	\$20,754 \$20,754 \$20,754 \$20,754 \$20,754	50%	2003-2004 2004-2005 2005-2006 2006-2007 2007-2008
CI+2 PI: George Eleftheriades	Planar RF and Microwave Metamaterials for Wireless Applications	Hold	NSERC Strategic Projects	\$157,916 \$137,913 \$127,913 \$127,413	33%	2002-2003 2003-2004 2004-2005 2005-2006
CI+3 PI: Stewart Aitchison	Artificially Structured Materials for Photonics	Hold	Photonic Research Ontario	\$150,000 \$150,000	25%	2003-2004 2004-2005
CI+4 PI: Stewart Aitchison	Nanofabrication of Metamaterials††	Hold	Canada Foundation for Innovation	\$20,869 \$2,672,325 \$1,932,741 \$58,825	20%	2003-2004 2004-2005 2005-2006 2006-2007
CI+4	Nanofabrication of	Hold	Ontario	\$20,869	20%	2003-2004

PI: Stewart Aitchison	Metamaterials ^{††}		Innovation Trust	\$2,672,325 \$1,932,741 \$58,825		2004-2005 2005-2006 2006-2007
CI+3 PI: Stewart Aitchison	Controlling the phase of light with nano-structured materials	Hold	Photonic Research Ontario	\$150,000 \$150,000	25%	2005-2006 2006-2007

* Principal Investigator (PI), or Co-Investigator (CI).

** Present balance for this account is \$94,736.60.

† “+x” indicates the number of associated investigators.

†† Due to the funding formula used by CFI and OIT, there is an additional \$2,492,893 contribution from institutions/corporations. These contributions are generally in the form of discounts for the purchase of equipment.

- **Synopsis of Canadian Research Funds:** Since my appointment in August 2001, the total funds (excluding the Departmental Start up) for which I have been PI or CI is **\$11,472,537.00**, from which my share is approximately **\$2,824,868.00**.

U.S. Funds

- “Detection of Superluminal Propagation at Low or Near Resonance Frequencies and the Dynamics of the Forerunners” Principal Investigator: Kevin J. Malloy; Co-Investigator: Raymond Chiao. Agency: National Aeronautics and Space Administration (NASA). Type of Grant: FF. Date of Grant: 01/10/2000, two year plan. Amount: \$170,354.00 (USD)
- “Efficient Ultra-wideband Flat Panel Radiators” Principal Investigators: Edl Schamiloglu and Kevin J. Malloy. Agency: Army Research Office (ARO). Type of Grant: BAA – Physics Program. Dates of Grant: 15 September 1996 to 15 September 1997. Amount: ~\$200,000.00 (USD)
- “Ultra-wideband Photonic Crystal Antennas.” Principal Investigator: Kevin J. Malloy. Agency: Office of Naval Research (ONR). Type of Grant: DURIP. Amount: ~\$145,000.00 (USD)

TEACHING AND STUDENT SUPERVISION

Student Supervision

Student Name	Degree	Starting Date	Comments
Suzan Erickson	M.A.Sc.	Sep. 2002	Graduated with M.A.Sc.
Jonathan Woodley	M.A.Sc.	Sep. 2001	Graduated with M.A.Sc.
Bert Leesti	M.A.Sc.	Sep. 2002	Graduated with M.A.Sc. Co-Supervisor Prof. Aitchison
Sam Gharavi	M.A.Sc.	Sep. 2005	In progress
Jonathan Woodley	Ph.D.	Jan. 2003	In progress

Mark Wheeler	M.A.Sc./Ph.D.	Sep. 2002	In progress. On September 2003 he was moved to the Ph.D. program on the fast track. Co-Supervisor Prof. Aitchison
Omar Siddiqui	Ph.D.	Sep. 2002- Dec. 2003	Co-supervised for the period with Prof. Eleftheriades
Reza Safian	Ph.D.	Sep. 2003	In progress. Co-supervisor Prof. Sarris
Muhammad Zulfiker Alam	Ph.D.	Jan. 2005	In progress. Co-supervisor Prof. Aitchison
Joachim Meier	Post Doctoral Fellow	Oct. 2004	Co-supervisor Prof. Aitchison
Mezan Khaja	Technical Assistant	Sep. 2004- Sep. 2005	Graduated from Eng. Sci. in May 2004
Trevor Sheriff and Najib Mumtaz-Shah	4 th year undergraduate Student	Sep. 2001 May 2002	496 Design Project
Robert Remba and Shilpy Ticku	4 th year undergraduate Student	Sep. 2003- May 2004	496 Design Project
Mezan Khaja	4 th year undergraduate Student	Jan. 2003- May 2004	Eng. Sci. Thesis
Sri Vithya Sagari Kusenthiran and Faiz Aslam-ali Hirani	4 th year undergraduate Student	Sep. 2004- May 2005	496 Design Project
Olivia Miloj and Dripto Sinha	4 th year undergraduate Student	Sep. 2004- May 2005	496 Design Project

Titles of Graduate Theses Completed or in Progress

Jonathan Woodley (M.A.Sc.)	2004 (Completed)	Negative Group Velocity and Group Delay in Left-handed Media
Bertram Leesti (M.A.Sc.)	2004 (Completed)	Cross-Gain Modulation and Four-Wave Mixing with Picosecond Pulses in a Quantum-Dash Waveguide
Suzanne Erickson (M.A.Sc.)	2005 (completed)	An Analysis of Negative Group Delay in Electronic Circuits
Sam Gharavi (M.A.Sc.)	In Progress	Design of High Speed and Compact Microwave Devices

Mark Wheeler (Ph.D.)	In progress	Left Handed Media at Infrared and Optical Frequencies
Muhammad Zulfiker Alam (Ph.D.)	In Progress	Plasmonic Devices at Microwave and Optical Frequencies
Jonathan Woodley (Ph.D.)	In progress	Wave Propagation in Left Handed media
Reza Safian (Ph.D.)	In Progress	Transient Response and Precursor Fields

Post Doctoral Research Projects

Joachim Miere	In Progress	Linear and Non-linear Phenomenon in Quantum Confined Optical Amplifiers
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Teaching at the University of Toronto

Course	Title	Class Enrollment	Year	Description
ECE115	Electricity and Magnetism	115	Spring of 2002	First year undergraduate
ECE1251	Matter Wave Interaction	7	Fall of 2002	Graduate course (EM/Photonics)
ECE115	Electricity and Magnetism	99 (Sec. 01) 99 (Sec. 02)	Spring of 2003	First year undergraduate
ECE320	Fields and Waves	82	Fall of 2003	Third year undergraduate
ECE115	Electricity and Magnetism	68	Spring of 2004	First year undergraduate
ECE1251	Matter Wave Interaction	10	Spring of 2004	Graduate course (EM/Photonics)
ECE1228	Electromagnetic Theory	13	Fall of 2004	Graduate course (EM/Photonics)
ECE115	Electricity and Magnetism	73	Spring of 2005	First year undergraduate
ECE357	Electromagnetic Fields	37	Spring of 2005	Third year undergraduate
ECE320	Fields and Waves	61	Fall of 2005	Third year undergraduate

Teaching Awards and Recognition

- Letters of recognition for excellent teaching reviews from the ECE chair(s): 2002, 2003, 2004, 2005 (please see the attached documents.)

Previous Teaching Experience

EECE 361	Electromagnetic Fields and Waves I.	Undergraduate E&M at the University of New Mexico. Course Evaluation System (ICES) report can be provided upon request.
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PUBLICATIONS

Refereed Journal Papers (Submitted):

- JS1. S. J. Erickson, and **M. Mojahedi**, "Time-Advanced Pulses in Electronic Circuits," submitted to *IEEE Transactions on Circuits and Systems I*, August 2005.
- JS2. J. F. Woodley, and **M. Mojahedi**, "Backwards wave propagation in left-handed media with isotropic and anisotropic permittivity tensors," submitted to *Journal of the Optical Society of America B*, August 2005.
- JS3. R. Safian, C. D. Sarris, and **M. Mojahedi**, "Joint Time-Frequency and FDTD Analysis of Precursor Fields in Dispersive Media," submitted to *Physical Review E*, Jun 2005.

Refereed Journal Papers (Published or Accepted):

- JP1. M. S. Wheeler, J. S. Aitchison, and **M. Mojahedi**, "Coated Non-magnetic Spheres with a Negative Index of Refraction at Infrared Frequencies." *Physical Review B*, Vol. 73, pp. 045105-1: 045105-7, January 6, 2006.
- JP2. M. S. Wheeler, J. S. Aitchison, and **M. Mojahedi**, "Three-dimensional Array of Dielectric Spheres with an Isotropic Negative Permeability at Infrared Frequencies." *Physical Review B* (Brief Reports), Vol. 72, pp. 193103-1: 193103-4, November 2005.
- JP3. M. S. Wheeler, J. S. Aitchison, and **M. Mojahedi**, "Negative refraction in a photonic crystal with a metallic cross lattice basis," *Physical Review B*, Vol. 71, pp. 155106-1:155106-8, April 2005.
- JP4. J. F. Woodley, M. S. Wheeler, and **M. Mojahedi** "Left-Handed and Right-Handed Metamaterials composed of Split Ring Resonators and Strip Wires," *Physical Review E*, Vol. 71, pp. 066605(1)-066605(6), June 2005.
- JP5. B. Leesti, A. J. Zilkie, J. S. Aitchison, **M. Mojahedi**, R. H. Wang, T. J. Rotter, C. Yang, A. Stintz, and K. J. Malloy, "Broadband Wavelength Up-Conversion of Picosecond Pulses via Four-Wave Mixing in a Quantum-Dash Waveguide," *IEEE Photonics Technology Letters*, Vol. 17, pp. 1046-1048, May 2005.
- JP6. J. F. Woodley, **M. Mojahedi**, "Negative Group Velocity and Group Delay in Left-

Handed Media,” *Physical Review E*, Vol. 70, pp. 046603(1)-046603(6), October 2004.

- JP7. O. F. Siddiqui, S. J. Erickson, G. V. Eleftheriades, and **M. Mojahedi**, “Time-Domain Measurement of Negative Group Delay in Negative-Refractive-Index Transmission-Line Metamaterials,” *IEEE Transactions on Microwave Theory and Techniques*, Vol. 52, pp. 1449-1454, May 2004.
- JP8. **M. Mojahedi**, K.J. Malloy, G. Eleftheriades, J. Woodley and R. Y. Chiao, “Abnormal Wave Propagation in Passive Media,” *IEEE Journal of Selected Topics in Quantum Electronics*, Vol. 1, pp. 30-39, January/February 2003.
- JP9. O. Siddiqui, **M. Mojahedi**, and G. V. Eleftheriades, “Periodically Loaded Transmission Line with Effective Negative Refractive Index and Negative Group Velocity,” *IEEE Transactions on Antennas and Propagation*, Vol. 51, pp. 2619-2625, October 2003.
- JP10. K. Agi, **M. Mojahedi**, B Minhas, E. Schamiloglu, and K. J. Malloy, “The Effects of an Electromagnetic Crystal Substrate on a Microstrip Patch Antenna,” *IEEE Transactions on Antennas Propagation*, Vol. 50, pp. 451-456, April 2002.
- JP11. **M. Mojahedi**, E. Schamiloglu, F. Hegeler and K. J. Malloy, “Time-Domain Detection of Superluminal Group Velocity for Single Microwave Pulses,” *Physical Review E*, Vol. 62, pp. 5758-5766, October 2000.
- JP12. **M. Mojahedi**, E. Schamiloglu, K. Agi, and K. J. Malloy, “Frequency Domain Detection of Superluminal Group Velocity in a Distributed Bragg Reflector,” *IEEE Journal of Quantum Electronics*, Vol. 36, pp. 418-424, April 2000.
- JP13. K. Agi, K. J. Malloy, E. Schamiloglu, **M. Mojahedi**, and E. Niver, “Integration of a Microstrip Patch Antenna with a Two-Dimensional Photonic Crystal Substrate,” *Electromagnetics, Special Issue: Theory and Applications of Photonic Band-gap Materials*, Vol. 19, pp. 277-290, May-June 1999.
- JP14. K. Agi, L. D. Moreland, E. Schamiloglu, **M. Mojahedi**, K. J. Malloy and E. R. Brown, “Photonic Crystals: A New Quasi-Optical Component for High-Power Microwaves,” *IEEE Transactions on Plasma Science*, vol. 24, pp. 1067-1071, June 1996 (Special Issue on High Power Microwave Generation.)

Book Chapters:

- BC1. **M. Mojahedi** and G. V. Eleftheriades, “Dispersion Engineering: The use of Abnormal Velocities and Negative Index of Refraction to Control Dispersive Effects,” *Negative Refraction Metamaterials: Fundamental Properties and Applications*, IEEE Press-Wiley Interscience (John Wiley & Sons, Inc.), pp. 381-411, 2005.

Refereed Conference Papers:

- RC1. M. S. Wheeler, J. S. Aitchison, and **M. Mojahedi**, “Negative permittivity and permeability in the infrared due to dielectric spheres,” *Photonics North: The International Society for Optical Engineering (SPIE)*, Toronto, Canada, September 12-14, 2005.
- RC2. J. F. Woodley, **M. Mojahedi**, “Determining the sign of the index in metamaterials composed of split ring resonators and strip wires using dispersion diagrams or the insertion phase,” *Photonics North: The International Society for Optical Engineering (SPIE)*, Toronto, Canada, September 12-14, 2005.
- RC3. A. J. Zilkie, J. Meier, P. W. E. Smith, **M. Mojahedi**, S. Aitchison, P. J. Poole, C. N. Allen, P. Barrios, D. Poitras, and S. Raymond, “Characterization of the Ultrafast Carrier Dynamics of InAs/InGaAsP Quantum Dot Semiconductor Optical Amplifier Operating at 1.55 μm ,” *Photonics North: The International Society for Optical Engineering (SPIE)*, Toronto, Canada, September 12-14, 2005.
- RC4. M. S. Wheeler, J. S. Aitchison, and **M. Mojahedi**, “Magnetism and Effective Electromagnetic Parameters from Dielectric Spheres,” *Antennas, Radar, and Wave Propagation Conference (IASTED and IEEE AP-S)*, Banff, Alberta, Canada, July 19-21, 2005.
- RC5. R. Safian, C. D. Sarris, and **M. Mojahedi**, “Numerical Calculation of Precursor Fields in One Dimensional Photonic Crystal,” *Antennas, Radar, and Wave Propagation Conference (IASTED and IEEE AP-S)*, Banff, Alberta, Canada, July 19-21, 2005.
- RC6. J. F. Woodley, **M. Mojahedi**, “Backwards waves in Anisotropic Left-Handed Media,” *Antennas, Radar, and Wave Propagation Conference (IASTED and IEEE AP-S)*, Banff, Alberta, Canada, July 19-21, 2005.
- RC7. S. J. Erickson, M. Khaja, and **M. Mojahedi**, “Time- and Frequency-Domain Measurements for an Active Negative Group Delay Circuit,” *AP-S International Symposium and USNC/URSI National Radio Science Meeting*, Washington DC, July 3-8, 2005.
- RC8. J. F. Woodley, M. S. Wheeler, and **M. Mojahedi**, “Left-Handed and Right-Handed Metamaterials composed of Split Ring Resonators and Strip Wire” *AP-S International Symposium and USNC/URSI National Radio Science Meeting*, Washington DC, July 3-8, 2005.
- RC9. R. Safian, C. Sarris, and **M. Mojahedi**, “Time and Frequency Evolution of Precursor Fields in Dispersive Media using FDTD and Joint Time-Frequency,” *IEEE –Applied Computational Electromagnetics Society (ACES) International Conference*, Hawaii, April 3-7, 2005.
- RC10. B. Leesti, A. J. Zilkie, J. S. Aitchison, **M. Mojahedi**, P. W. E. Smith, R. H. Wang, T. J. Rotter, C. Yang, A. Stintz, K. J. Malloy “Highly Nondegenerate Four-Wave Mixing with Picosecond Pulses in a Quantum-Dash Waveguide,” *17th Annual Meeting of the IEEE Laser*

& *Electro-Optics Society (LEOS)*, Puerto Rico, November 7-11, 2004.

- RC11. **M. Mojahedi**, G.V. Eleftheriades, O. Siddiqui, and S. Erickson, "Dispersion Engineering: The Use of Negative Phase and Group Indices to Compensate Dispersive Effects," *Bianisotropics 2004-10th Conference on Complex Media and Metamaterials*, Ghent, Belgium, September 22-24, 2004.
- RC12. M. S. Wheeler, J. S. Aitchison, C. D. Sarris, and **M. Mojahedi** "Tunable Metallic Photonic Crystals with an Effective Negative Index of Refraction," *AP-S International Symposium and USNC/URSI National Radio Science Meeting*, Monterey, California, June 20-26, 2004.
- RC13. O. Siddiqui, **M. Mojahedi**, S. Erickson, and G. V. Eleftheriades, "Periodically Loaded Transmission Line with Effective Negative Refractive Index and Negative Group Velocity," *AP-S International Symposium and USNC/CNC/URSI National Radio Science Meeting*, Columbus, Ohio, USA, June 22-27, 2003.
- RC14. J. F. Woodley and **M. Mojahedi**, "Negative Group Velocity in Left-Handed Materials," *AP-S International Symposium and USNC/CNC/URSI National Radio Science Meeting*, Columbus, Ohio, USA, June 22-27, 2003.
- RC15. **M. Mojahedi**, O. Siddiqui, J. Woodley, and G. V. Eleftheriades, "Pulse Propagation and Negative Group Delay in Metamaterials," *Progress in Electromagnetics Research Symposium (PIERS)*, Cambridge, Massachusetts, USA, July 1-5, 2002.
- RC16. V. A. Smagley, **M. Mojahedi**, M. Osinski, "Operator ordering of a position-dependent effective-mass Hamiltonian in semiconductor superlattices and quantum wells," *Physics and Simulation of Optoelectronic Devices, X-Proceedings of the International Society for Optical Engineering (SPIE)*, Vol. 4646, San Jose, California, USA, January 21-25, 2002.
- RC17. **M. Mojahedi**, K. J. Malloy and R. Y. Chiao, "Superluminal But Causal Wave Propagation," 37th AIAA/ASME/SAE/ASEE Joint Propulsion Conference, Salt Lake city, Utah, July 8-11, 2001. Published in American Institute of Aeronautics and Astronautics (AIAA), July 2001.
- RC18. **M. Mojahedi**, K. J. Malloy, and R. Y. Chiao, "Frequency- and Time Domain Detection of Superluminal Group Velocities in One Dimensional Photonic Crystals (1DPC)," *Space Technology & Applications International Forum (STAIF-2000)*, Albuquerque, NM, USA, January 30- February 3, 2000.
- RC19. E. Schamiloglu, **M. Mojahedi**, F. Hegeler, G. T. Park, K. Agi, and K. J. Malloy, "Detection of Superluminal (but Causal) Group Velocity in One-Dimensional Photonic Crystals Using High Power Microwave Source," *Twenty Fourth International Conference on Infrared and Millimeter Waves*, Monterey, CA, USA, September 6-10, 1999.
- RC20. K. Agi, **M. Mojahedi**, Malloy and E. Schamiloglu, "An Ultrawideband Photonic Crystal Antenna," *Proceedings of the 11th IEEE International Pulsed Power Conference*, Baltimore,

MD, USA, June 29-July 2, 1997.

- RC21. K. Agi, **M. Mojahedi** and K. J. Malloy, "The Time Evolution of Photonic Crystal Bandgaps," Proceedings of the Third international Conference on Ultra-wideband, Short-pulse Electromagnetics. Published in *Ultra-wideband, Short-pulse Electromagnetics 3*, Plenum, New York, NY, USA, 1997. (Editors: C. E. Baum, L. Carin, and A. P. Stone.)
- RC22. K. Agi, **M. Mojahedi**, K. J. Malloy, F. Hegeler and E. Schamiloglu, "Investigation of the Dispersive Properties of Photonic Crystals Using High-Power Microwaves," *IEEE International Conference on Plasma Science*, San Diego, CA, USA, May 19-22, 1997.
- RC23. K. Agi, **M. Mojahedi**, L.D. Moreland, E. Schamiloglu and K. J. Malloy, "Photonic Crystals for High Power Microwaves," *AMEREM 96*, Albuquerque, NM, USA, May 1996.
- RC24. M. Osinski, and **M. Mojahedi**, "Density of Confined States in Finite-Barrier Quantum Wells," *IEEE Lasers and Electro-Optics Society (LEOS)*, San Jose, CA, USA, November 15-18, 1993.

Non-Refereed Conference Papers:

- CP1. S. J. Erickson, O. F. Siddiqui, G. V. Eleftheriades, and **M. Mojahedi**, "Transmission Line meta-materials with Effective Negative Refractive Index and Negative Group Delay," *Bulletin of American Physical Society*, Montreal, Canada, March 22-26, 2004.
- CP2. M. S. Wheeler, J. S. Aitchison, and **M. Mojahedi**, "A Novel Two-Dimensional Negative index Metamaterial suitable for planar Processing," *Bulletin of American Physical Society*, Montreal, Canada, March 22-26, 2004.
- CP3. **M. Mojahedi**, K. J. Malloy, E. Schamiloglu, F. Hegeler, and G. Park, "Use of High Power Microwave Source to Detect Superluminal Group Velocities," *Bulletin of American Physical Society*, 41st Annual Meeting of the Division of Plasma Physics, Seattle, WA, USA, November 15-19, 1999.
- CP4. K. Agi, K. J. Malloy, E. Schamiloglu, and **M. Mojahedi**, "Compact Microstrip Patch Antennas on Photonic Crystal Substrates," *USNC/URSI National Radio Science Meeting*, Atlanta, GA, USA, June 1998.
- CP5. K. Agi, F. Hegeler, **M. Mojahedi**, K. J. Malloy and E. Schamiloglu, "Detection of Forerunners in Structural Dispersion Using High Power Microwaves," *Bulletin of American Physical Society*, 39st Annual Meeting of the Division of Plasma Physics Pittsburgh, PA, USA, November 17-21, 1997
- CP6. M. Osinski, and **M. Mojahedi**, "Density of Confined States in Finite-Barrier Quantum Wells," *DARPA Optoelectronic Materials Center Review*, Pasadena CA, USA, January 21-22, 1993.

- CP7. M. Osinski, **M. Mojahedi**, and M. W. Prairie, "Density of States in Finite-barrier Quantum Well," *Optical Society of America (OSA) Annual meeting*, Albuquerque, N.M., USA, September 20-25, 1992.
- CP8. **M. Mojahedi**, and M. Osinski, "Effects of Operator Ordering in Effective-Mass Hamiltonian on Transition Energies in Semiconductor Quantum Wells," *Optical Society of America (OSA) Annual meeting*, San Jose, CA, USA, November 3-8, 1991.
- CP9. **M. Mojahedi** and M. Osinski, "Operator Ordering in Effective-Mass Hamiltonian for Semiconductor Superlattices and Quantum Wells," *3rd Annual New Mexico Symposium on Ceramics and Advanced Materials*, Albuquerque, NM, USA, October 24-25, 1991.

Invited Lectures and Presentations:

- L1. **M. Mojahedi**, Dispersion Engineering: the Principles and Applications. *36th Winter Colloquium on the Physics of Quantum Electronics*, Snowbird, Utah, USA. January 2-6, 2006.
- L2. **M. Mojahedi**, "Superluminal Velocities in Causal Media," *Kavli Institute for Theoretical Physics (KITP), Mini program on Quantum Optics*, Santa Barbara, CA, USA, July 8-26, 2002.
- L3. **M. Mojahedi**, "Negative and Superluminal Velocities in Linear, Time Invariant, Causal Media," *Photonics Research Ontario-Frontiers in Photonic Seminar*, Toronto, Ontario, Canada, April 10, 2002.
- L4. **M. Mojahedi**, K. J. Malloy, and R. Y. Chiao, "Abnormal velocities in linear, time invariant, causal systems," *Center for Advance Studies (CAS)*, Department of Physics and Astronomy, University of New Mexico, Albuquerque N.M., USA, March 1, 2001.
- L5. **M. Mojahedi**, Invited Speaker for the *New Mexican for Science and Reason Forum*, January 2001 (Lecture for a general audience.)
- L6. K. Agi, B. Minhas, **M. Mojahedi**, and K. J. Malloy, "Compact Microstrip Patch Antennas on Electromagnetic Crystal Substrates," *Workshop on Electromagnetic Crystals (WECS)*, Laguna Beach, CA, USA, January 1999.
- L7. K. Agi, **M. Mojahedi**, E. Schamiloglu and K. J. Malloy, "Ultra-wideband Photonic Crystal Antennas," *Proceedings of Seventh Annual DARPA Symposium on Photonic Systems for Antenna Applications*, Monterey, CA, USA, January 1997.

Other Lectures and Presentations:

- OL1. **M. Mojahedi**, "Dispersion Engineering: The Use of Abnormal Velocities and Negative Index of Refraction to Compensate Dispersive Effects," presented at the *Center for High*

Technology Materials, University of New Mexico, Albuquerque, N.M.,USA, Jun 4, 2004.

OL2. **M. Mojahedi**, “Dispersion Engineering: The Use of Abnormal Velocities and Negative Index of Refraction to Compensate Dispersion,” presented at *Canada Scotland Workshop*, Toronto, Ontario, Canada, September 8-9, 2003.

Technical Report:

TR1. S. Aitchison, H. van Driel, **M. Mojahedi**, and J. Sipe “Artificially Structured Materials for Photonics,” submitted to *Photonic Research Ontario*, 2005.

TR2. **M. Mojahedi**, and Kevin Malloy “Detection of Superluminal Propagation at Low or Near Resonance Frequencies and the Dynamics of the Forerunners,” submitted to *the National Aeronautics and Space Administration (NASA)*, 2000.

TR3. E. Schamiloglu, K. J. Malloy, K. Agi, and **M. Mojahedi**, “Photonic Crystal Flat Panel Radiators for Wideband High Power Antennas,” submitted to the *U.S. Army Research Office*, 1999.

Other Relevant Publications:

- My research was featured in *Albuquerque Journal*, the largest circulating daily newspaper in New Mexico, November 2000. Editor: John Fleck
- My research was featured in *Skeptical Inquirer the Magazine for Science and Reason*, May/June 2001, pp. 12-13. Editor: David Thomas.
- **Synopsis of Publications:** Since my appointment in August 2001, **on the average**, I have published **3.25 refereed Journal papers** (published and submitted), and **4 refereed conference papers, per year**. The vast majority of the journal publications are relatively long papers in **Physical Review or IEEE Transactions**.

ADMINISTRATION AND PROFESSIONAL ACTIVITIES

- Organizer and the chair of an special session in the *IEEE Antenna and Propagation Society (AP-S) Symposium*, Albuquerque, New Mexico, USA, 2006. The special session will concentrate on the topic of “Dispersion Engineering,” and professor Eleftheriades is the co-chair of the session.
- Graduate Secretary for the Electromagnetic Group since 2002.
- Member of Departmental Strategic Planning – Subcommittee in Research (Chaired by Prof. Gulak), 2004.

- Member of Departmental Curriculum Matters Committee, 2005.
- Contributor to the Departmental Committee for Curriculum Review, 2004.
- Ph.D. Qualifying Examination Committee, Ph.D. Dissertation committee, M.A.Sc. Thesis Committee, Ph.D. Progress Review Committee.

SIX MOST IMPORTANT CONTRIBUTIONS

- M. S. Wheeler, J. S. Aitchison, and **M. Mojahedi**, “Coated Non-magnetic Spheres with a Negative Index of Refraction at Infrared Frequencies.” Accepted for publication in *Physical Review B*.
- M. S. Wheeler, J. S. Aitchison, and **M. Mojahedi**, “Three-dimensional Array of Dielectric Spheres with an Isotropic Negative Permeability at Infrared Frequencies.” Accepted for publication in *Physical Review B* (Brief Reports).
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- **M. Mojahedi**, K.J. Malloy, G. Eleftheriades, J. Woodley and R. Y. Chiao, “Abnormal Wave Propagation in Passive Media,” *IEEE Journal of Selected Topics in Quantum Electronics*, Vol. 1, pp. 30, January/February 2003.