CURRICULUM VITAE - HAO XIN

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Contact Information
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Summary
Dr. Hao Xin is a professor of Electrical and Computer Engineering, professor of Physics, and an Arizona Engineering Fellow at the University of Arizona. He is also the inaugural director of the Cognitive Sensing Center at the University of Arizona. His current teaching and research interests are on high frequency (from microwave to THz) technologies, including passive and active circuits, antennas, properties and applications of new materials such as metamaterials and nano-materials for wireless communication, sensing, bio-medical, and energy harvesting. Before joining the University of Arizona, he worked as research scientist at Rockwell Scientific Company and as Sr. Principal Multidisciplinary Engineer at Raytheon Missile Systems. He has published over 240 refereed papers and holds 13 patents and 7 patent disclosures in related research areas. He served as the general co-chair of the 8th International Antenna Technology Workshop and the general secretary of the 39th International Infrared, Millimeter Wave and THz Conference. He is an associate editor for IEEE Antennas and Wireless Propagation Letters. He is also the Tucson joint chapter chair of IEEE Microwave Theory and Techniques / Antennas and Propagation societies. Dr. Xin has current and previous research support (overall > $12M) from DARPA, ARO, AFOSR, ONR, NSF, AFRL, and industry for his research on a broad range of topics related to microwave engineering. He has graduated and mentored 7 post-docs, 11 (including 6 visiting) PhD students, 8 MS students, and more than 60 undergraduate students. Currently he supervises 1 Post-Doc, 11 (including 1 visiting) PhD students, and 13 undergraduate students.

☐ Chronology of Education

- **Massachusetts Institute of Technology:** Ph.D. in Physics **February 2001**
  Thesis Advisors: Prof. Mildred Dresselhaus, Dr. Dan Oates
  Thesis Title: Study of Microwave Properties of High-T_C Superconducting Films
- **University of Massachusetts, Dartmouth:** BS in Physics and Mathematics, Summa cum Laude, **June 1995**

☐ Chronology of Employment and Professional Experience

- **Aug. 2013 – Aug. 2016:** Arizona Engineering Fellow (1 of 3 research fellows in CoE), College of Engineering, the University of Arizona

- **Aug. 2012 to present:** Professor in Electrical and Computer Engineering Department and Physics Department, the University of Arizona
- **2012 – 2013:** National Research Council Senior Associate at AFRL, San Antonio, TX
- **2011 - 2012:** Visiting Scholar in Electrical Engineering Department, the University of Southern California
- **Aug. 2009 to 2012:** Associate Professor with Tenure in Electrical and Computer Engineering Department and Physics Department, the University of Arizona
- **Aug. 2005 – 2009:** Assistant Professor in Electrical and Computer Engineering Department and Physics Department, the University of Arizona.
- **Aug. 2004 – Aug. 2005:** Adjunct Assistant Professor in Electrical and Computer Engineering Department, the University of Arizona.
- **Nov. 2003 – Aug. 2005:** Sr. Principal Multidisciplinary Engineer at Raytheon Company
- **Nov. 2000 – Nov. 2003:** Member of Technical Staff at Rockwell Scientific Company.
- **Sept. 1995 – Nov. 2000:** Research Assistant and Teaching Assistant, Department of Physics, Department of Electrical Engineering and Computer Science and Lincoln Laboratory, Massachusetts Institute of Technology.
- **Jan. 1993 – May 1995:** Research Assistant, Department of Physics, University of Massachusetts, Dartmouth.

☐ Professional Activities / Services

- IEEE Senior Member since Nov. 2006
- American Society for Engineering Education (ASEE) Member since Oct. 2007
- American Physical Society (APS) Member

National / International

- Associate Editor, IEEE Antennas and Wireless Propagation Letters since July 2012
- Technical Paper Reviewer for
  - IET Microwaves, Antennas and Propagation
  - Physica E
  - Carbon
  - IEEE Transactions on Microwave Theory and Techniques
  - IEEE Transactions on Antennas and Propagation
  - IEEE Microwave and Wireless Components Letters
  - IEEE Antennas Wireless Propag. Lett.
  - IEEE Transactions on Electron Devices
  - IEEE Transactions on Nanotechnology
  - IEEE Transactions on THz Science and Technology

- IEEE Transactions on Molecular, Biological, and Multi-Scale Communications
- Metamaterials
- Materials
- FERMAT
- Chinese Optics Letters
- Nanoscale
- Journal of Electrical Engineering and Technology
- Optics Communication
- Progress in Electromagnetics Research
- ASME (American Society of Mechanical Engineers) Journal of Heat Transfer
- ASME (American Society of Mechanical Engineers) Journal of Nanotechnology in Engineering and Medicine
- OSA (Optical Society of America) Applied Optics
- ACES (The Applied Computational Electromagnetics Society) Journal
- Informatics for Medicine
- IEEE Radio and Wireless Symposium 2008 - 2010
- IEEE Radio and Wireless Symposium 2012, 2013
- IEEE International Workshop on Antenna Technology 2009 - 2013
- International Symposium on Antennas and Propagation 2011 - present
- IEEE Consumer Electronics Conference 2011, 2013
- SPIE Photonic West 2013

- Proposal Reviewer for
  - Region 2 University Transportation Research Center
  - AFOSR, May 2016
  - Dutch Technology Foundation, Nov. 2015
  - NSF ECCS CAREER panel, Nov. 2015
  - University of Macau University of Macau Multi-Year Research Grant, Oct. 2015
  - IEEE Microwave Theory and Techniques Undergraduate / Pre-Graduate Research Fellowship Program, 2015
  - Hong Kong ERC, 2014
  - European Science Foundation (ESF), 2014
  - Research Grants Council (RGC) Hong Kong, 2014, 2015, 2016
  - University of Macau University of Macau Multi-Year Research Grant, 2014

- Oak Ridge Associated Universities / Nazarbayev University Research Council in Astana, Kazakhstan, 2014
- Science Foundation Arizona
- University of Arizona NSF-MRI Preproposal (VPR office)
- Army Research Office, 2006, 2010, 2012
- Qatar National Research Fund/Qatar Foundation, 2010
- Department of States, 2006

- Book proposal Reviewer for
  - John Wiley
  - Cambridge
- Committees for Technical Organizations
  - IEEE MTT Nano RF Committee, 2010 – present
  - Rockwell Scientific Company Nanotechnology Panel Member, 2003
  - Rockwell Scientific Company Communication Technology Panel Member, 2003
- Committees for Conferences/Symposia
  - Technical Program Committee (TPC) Member, ACM NanoCom 2016
  - Special Session Co-Organizer, "THz Antennas and Applications," URSI Boulder, 2016
  - Special Session Co-Organizer, "3D Printed Antennas," URSI Boulder, 2016
  - Technical Program Committee (TPC) Member, IEEE International Workshop on Antenna Technology (iWAT) 2016
  - Special Session Co-Organizer, "3D Printed Antennas and Electromagnetic Structures," IEEE International Workshop on Antenna Technology (iWAT) 2016
  - Lunch Panel Co-Organizer, "Multiphysics and the Role of Commercial Simulators in Modern EM Graduate Education", IEEE AP-S / URSI International Symposium 2016
  - Technical Program Committee (TPC) Member, India Microwave Conference(IMaRC) 2015
  - Technical Program Committee (TPC) Member, International Symposium on Antennas and propagation (ISAP) 2015
  - Technical Program Committee (TPC) Member, IEEE International Microwave Symposium (IMS) 2015
  - Special Session Organizer, "3D Printed Antennas and Electromagnetic Structures," European Antenna Conference (EUCAP) 2015
  - TPC Member, International Microwave and RF Conference (IMaRC) 2014
  - Member at Large of Organizing Committee, IEEE AP-S International Symposium 2016
  - Special Session Committee Chair, IEEE AP-S / RUSI International Symposium 2016

- General Secretary, Infrared, Millimeter Wave and THz Conference 2014
- Special Session Co-Organizer, “Theory and Applications of Graphene in Antenna and Microwave Engineering,” European Antenna Conference (EUCAP) 2014
- Session Chair, URSI Boulder, 2014, 2016
- Special Session Co-Organizer, “THz Antennas and Applications,” URSI 2014
- TPC for International Symposium on Antennas and Propagation (ISAP), 2013.
- TPC for IEEE AP-S 2013, 2014, 2015
- Special Session Co-Organizer, “THz Antennas and Other Technology,” IEEE AP-S International Symposium 2013
- Special Session Organizer, “Graphene and Other Nano-Materials for Antenna Applications,” EUCAP 2013
- TPC Member, THz and Ultrashort EM pulses for Biomedical Applications, SPIE Photonic West 2013
- TPC Member, IEEE Radio and Wireless Symp. (RWS) 2013, 2015, 2016, 2017
- TPC Member, Asian Pacific Microwave Conf. (APMC) 2012, 2015, 2016
- Best Student Paper Committee, Asian Pacific Microwave Conf. (APMC) 2015
- TPC Member, IEEE Intl. Conf. on Consumer Electronics (ICCE) 2012
- Session Chair, IEEE AP-S 2012 - 2015
- Special Session Co-Organizer, “THz Technology,” IEEE AP-S International Symposium 2012
- General co-Chair, 8th IEEE International Workshop on Antenna Technology (iWAT) 2012
- Session Chair, IEEE AP-S International Symposium 2011
- Local Organization Committee, 22nd International Symposium on Space Terahertz Technology, 2011
- International Steering Committee, Cross Strait Quad-Regional Radio Science and Wireless Technology Conference
- TPC Member, IEEE Radio and Wireless Symposium 2011
- TPC Member, IEEE International Workshop on Antenna Technology (iWAT) 2011
- TPC Member, IEEE International Workshop on Antenna Technology (iWAT) 2010
- TPC Member, International Conference on Consumer Electronics, 2009, 2010
- Special and focus Sessions Co-Organizer, “Electromagnetics and Solar Energy,” IEEE AP-S International Symposium 2009
- TPC Member, IEEE Radio and Wireless Symposium 2009
- TPC Member, IEEE International Workshop on Antenna Technology (iWAT) 2009

- Organizing Committee Member, Sponsorship/Exhibition Chair, IEEE International Workshop on Antenna Technology (iWAT) 2009
- TPC Member, IEEE Radio and Wireless Symposium 2008
- Special and focus Sessions Organizer, "Millimeter-Wave Antenna Technologies and Applications," IEEE AP-S International Symposium 2007
- Session Chair, IEEE AP-S International Symposium 2007
- Session Chair, Raytheon RF Symposium, 2005

- Other Activities
  - Consultant for Physical Optics Corp. (2015)
  - Technology Assessment & Evaluation Consultant for FutureWei Tech. Inc. (2011)
  - Speaker, NSF Emerging Frontier of Research and Innovation (EFRI) Panel, Jan. 2013
  - Attendee, NSF Workshop on Effective Engagement and Collaboration of US CISE - China Researchers, May 2011
  - Taught an advanced training class for practicing engineers at the Radar and RF Center of Raytheon Missile Systems, "Microwave Power Amplifier Design," Oct. 2006 – Dec. 2006
  - Faculty Mentor of NSF REU (Research Experiences for Undergraduates) Program at the University of Arizona, 2005, 2006, 2007, 2013, 2014
  - Industrial Mentor for NSF Connection One Center, 2004, 2005
  - Engineering Consultant for Raytheon Missile Systems (2006 to 2008)
  - Engineering Consultant for NextGen Aeronautics (2006 to present)
  - Extensive graduate student applicant recruitment effort for the ECE department including numerous email correspondences, telephone calls, skype interviews, presentations and hosts of visiting perspective candidates for more than 50 domestic and international students
  - Initiation and exhibition of the U of A ECE Dept. education and research programs at one the largest IEEE conferences (IEEE Intl' Microwave Symposium 2008 in Atlanta, 2009 in Boston, more than 10,000 attendees, 2015 in Phoenix)
  - Invited a number (more than 30) of external speakers and arranged campus wide seminars including IEEE distinguished lecturer

Local / State

- IEEE Tucson Section MTT/AP/COMM/EMC Joint Chapter Chair, 2007 – present
- IEEE MTT Society Student Branch Faculty Advisor, 2009 – present
- Organized the graduate Recruiting Fair for Electrical and Computer Engineering Department (ECE) at the University of Arizona (U of A), Nov. 2008, Mar. 2013
- Mentor, Arizona Assurance Program, AY-2009, 2010
- Volunteer faculty demonstrator for the Physics Phun Nite events (received the Wild Cat Family Appreciation Certificate), 2006 and 2007

- Participated and presentation in local IEEE chapter meetings and events, 2006 – present
- Provided scientific and technical guidance to the general public: i.e., email exchanges and meeting with people interested in nanotechnology related topics
- Guest lectures for CoE Honor class, 2012, 2013
- Guest lectures at Harbin Engineering University, Nov. 2013
- Hosted lab tours for visiting alumni
- Hosted visits and collaborated with local high tech companies (including Sigma Technologies International Inc., Mercorp, etc.)
- Participated in local meetings organized by Arizona Nanotechnology Cluster

☐ Honors and Awards

- Faculty Advisor, Second prize of graduate student paper competition, International Telemetering Conference (ITC), Oct., 2014
- Faculty Advisor, Second prize of graduate student paper competition, International Telemetering Conference (ITC), Oct., 2013
- Faculty Fellow, College of Engineering, University of Arizona, Sept. 2013 – Sept. 2016
- Faculty Advisor, IEEE Antennas and Propagation Society PhD Research Award, 2012
- Faculty Advisor, IEEE Antennas and Propagation Society PhD Research Award, 2013
- National Research Council Sr. Associate Award, Feb. 2012
- General co-Chair, 8th IEEE Int. Workshop on Antenna Technology (iWAT), Mar. 2012
- Invited Keynote Speaker, 7th IEEE Int. Workshop on Antenna Technology (iWAT), Mar. 2011
- Wild Cat Family Spirit Award 2008
- Finalist for Best Paper Award, "Dual-Band Balun with Fully Matched Performance," finalist for award, IEEE Asian Pacific Microwave Conference (APMC), Dec. 2008
- Finalist for Best Paper, "Investigation of Terahertz (THz) Electromagnetic Band Gap Structures," IEEE Asian Pacific Microwave Conference (APMC), Dec. 2008
- Faculty Advisor, Second prize of student paper competition, International Telemetering Conference (ITC), Oct., 2008
- Co-recipient, Best Poster Award, Annual Meeting of the Microscopy Society of America, Aug. 2008
- Travel Award for NATO Advanced Institute of Study on Microwave Superconductivity (1999)
- Winner of Society of Physics Students (SPS) Scholarship (1 out of 14 nationwide, 1995)
- Undergraduate research award, Physics Dept., UMASS Dartmouth (1995)
- Highest Scholastic Achievement Award in Arts and Science College, UMASS Dartmouth (1995)
- Member of Sigma Pi Sigma, the National Physics Honor Society

- Scholastic Achievement Award in Physics, Louis Simeone Certificate of Merit, Achievement of Highest Honor in Physics, Achievement of Highest Honor in Mathematics (1992 – 1994)

☐ Invited Colloquia / Seminars

- Ohio State University, Feb. 2016.
- Seminar for "Advancement in Electromagnetics", University of South Carolina, Apr. 2016.
- College of Optical Science Colloquium, University of Arizona, Oct. 2015.
- National Key Laboratory of Computational Electromagnetics and Physics, Beijing, China, June. 2015.
- City University of Hong Kong, Hongkong, China, June. 2015.
- Hong Kong Chinese University, Hongkong, China, June. 2015.
- Shanghai University of Science and Technology, Shanghai, China, June. 2015.
- Shanghai Science Association, Shanghai, China, June. 2015.
- ARTFG Materials Workshop – Nanomaterial Characterization, Boulder CO, Dec. 2014.
- Xian Electronics University, Xian, China, July. 2014.
- Connection One Center, Fulton Schools of Engineering, Arizona State University, Mar. 2014.
- Aerospace and Mechanical Dept., University of Arizona, Mar. 2014.
- Institute for Infocomm Research, Agency for Science, Technology and Research (A*STAR) Singapore, Dec. 2013.
- Harbin Institute of Technology, Electrical Engineering Dept., Harbin China, Nov. 2013.
- Institute of Electronics, Chinese Academy of Science, Beijing China, Nov. 2013.
- Raytheon Missile Systems Engineering Colloquium – Tucson, AZ, Oct. 2013.
- Raytheon Fellows Seminar Series – El Segundo, CA, August 2013.
- University of Electronic Science and Technology, Chengdu China, May 2013.
- National Science Foundation – Emerging Frontiers in Research and Innovation Topic Idea Presentation (10 selected from 160 submissions), Washington DC, January 2013.
- National Astronomical Observatory of China, Beijing China, June 2012.
- University of Science and Technology of China, Electrical Engineering Dept., Hefei China, March 2012.
- Xiamen University, Electrical Engineering Dept., Xiamen China, March 2012.
- Tsinghua University, Electrical Engineering Dept., Beijing China, March 2012.
- UCLA, Electrical Engineering Dept., Santa Monica, CA, Dec. 8, 2011.
- Air Force Research Laboratory, Fort Sam Houston, San Antonio, TX, Nov. 9, 2011.
- Hebrew University of Jerusalem, U.S. / Israel Metamaterial Workshop, Jerusalem, Israel, Nov. 16, 2011.
- Zhejiang University, Dept. of Information and Electronic Engineering, Hangzhou, China, July 19, 2011.
- China Academy of Space Technology, Xian, China, July 28, 2011.
- Southeastern University / IEEE Nanjing Chapter, Dept. of Information Science and Engineering, July 31, 2011.

- Northeastern University, Electrical and Computer Engineering Dept., Boston, MA, June 15, 2011.
- National Institute of Standards and Technology, Optical Technology Division, Apr. 18, 2011.
- University of Central Florida, Dept. of EECS/IEEE MTT Society, Mar. 22, 2011.
- North Carolina State University, Feb. 22, 2011.
- Kirtland Air Force Research Laboratory, Space Vehicle Directorate, Jul. 21, 2010.
- Zhejiang University, Dept. of Information and Electronic Engineering, Jun. 6, 2010.
- University of Arizona, IEEE MTT-Student Branch Talk, April 6th 2010
- MIT Energy Frontier Center Seminar, March 9th 2010
- Hughes Research Laboratory, Feb. 5th 2010
- Dept. of Electrical Engineering, University of Mississippi, Dec. 10th 2009
- Suzhou Nanotech Institute, Academia Sinica, July 2009
- ECE Dept. of University of Science and Technology of China, June 2009
- Physics Dept. of University of Science and Technology of China, June 2009
- Invited Speaker, ARO Audio Workshop, Washington DC, 2009
- Invited Speaker, IEEE Waves and Devices Chapter, Phoenix AZ, June 29th 2008
- Asylum Research, Santa Barbara CA, June 2nd 2008
- Ohio University, Electrical Engineering and Computer Science Department Seminar, May 13th 2008
- University of Arizona, Physics Department, Low Energy Physics Seminar, Sept. 27th 2007
- Raytheon Company Heterogeneous 3-D Integration Workshop, June 18th 2007
- Raytheon Company RF Symposium Guest Speaker, June 20th 2007
- University of California, Riverside, Dept. of Mechanical Engineering, April 13th 2007
- Nextgen Aeronautics Inc., Torrance CA, Jan. 10th 2007
- Tsinghua University**,** Dept. of Electrical Engineering, Dec. 21st 2005
- Motorola Lab, Millimeter Wave Group, Tempe AZ, Sept. 12th 2005
- University of Arizona, ECE Dept., Feb. 1st 2005

☐ Invited Conference Talks

- "Principal Component Analysis (PCA) based compressive sensing millimeter wave imaging system," IEEE Antennas and Propagation / URSI Symp., Vancouver, Canada, Jul. 2015.
- "Stability analysis and parasitic effects of negative impedance converter circuits," invited for focused session at International Microwave Symposium 2016 (IMS-2016), Phoenix, May 2015.
- "Linear and Nonlinear Microwave Characterization of CVD-Grown Graphene Using CPW Structure," European Antenna and Propagation Conference (EuCAP-2015), Lisbon, Portugal, Apr. 2015.
- "3D PRINTING MULTI-FUNCTIONALITY: Embedded RF Antennas and Components," European Antenna and Propagation Conference (EuCAP-2015), Lisbon, Portugal, Apr. 2015.
- "Terahertz Emission From Photoconductive Antenna Fabricated on GaAs/Sapphire

Substrate," European Antenna and Propagation Conference (EuCAP-2015), Lisbon, Portugal, Apr. 2015.

- "3D printed microwave and THz components using polymer jetting rapid prototyping technique", International Workshop on Antenna Technology (iWAT 2015), Seoul, Korea, Mar. 2015.
- **"**Radio-Frequency Direction Finding Inspired by Human Ears," Asia-Pacific Conference on Antenna and Propagation (APCAP-2014), Harbin, China, July 2014.
- "Non-contact thermoacoustic imaging based on laser and microwave vibrometry," *Progress in Electromagnetics Research* (PIERS-2014), Aug. 2014.
- "GHz to THz Characterization of Nano-Materials for High Frequency Applications," 84th ARFTG Conference - The New Frontiers for Microwave Measurements
- "Graphene conductivity characterization at microwave and THz frequency," European Antenna and Propagation Conference (EuCAP-2014), the Netherlands, Apr. 2014.
- "Theoretical and experimental study of a terahertz time-domain spectrometer based on photoconductive antenna," URSI, Boulder, Jan. 2014.
- "GHz to THz Components and Microsystems Utilizing 3D Additive Manufacturing Technology," IEEE India Microwave and RF Conf., New Delhi, Dec. 2013.
- "Thermoacoustic Imaging and Spectroscopy for Breast Cancer Detection Applications," 2013 IEEE MTT BioMed Conf., Singapore, Dec. 2013.
- "Active Microwave Metamaterials," 2013 Workshop on Computational Electromagnetics Methods and Applications, Harbin, Nov. 2013.
- "Terahertz Metasurface for Potential Live Cell Sensing Application," *IEEE AP/URSI Symp*., Orlando, July 2013.
- "Terahertz Characterization of Carbon Nanotube and Graphene On-Substrate Thin Films," European Conference of Antenna and Propagation (EuCAP-2013), Gothenburg, Sweden, April 2013.
- "Electromagnetic Crystal (EMXT) based Terahertz Horn Antenna," European Conference of Antenna and Propagation (EuCAP), Gothenburg, Sweden, April 2013.
- "Development of Terahertz Microfluidic Devices toward "Lab-on-a-Chip" Applications," SPIE Photonic West 2013, San Francisco, Feb. 2013.
- "High Frequency Characterization of Carbon Nanotube and Graphene Materials," International Conference on Electromagnetics in Advanced Applications (ICEAA 2012), Cape Town, South Africa, Sept. 2012.
- "Printed 3-D Electromagnetic Crystal (EMXT) Based THz Micro-Systems," IEEE Antennas and Propagation / URSI Symp., Chicago IL, Jul. 2012.
- "High Frequency (Microwave to THz) Study of Carbon Based Nano-Materials," IEEE Antennas and Propagation / URSI Symp., Chicago IL, Jul. 2012.
- "Investigation of High Frequency Properties of Carbon Based Nano-Materials and Devices," invited workshop talk, IEEE Microwave Symp., Montreal Canada, June 2012.
- "Experimental Research on the Microwave Properties of Carbon Nanotube Array," IEEE International Workshop on Antenna Technology (iWAT), Tucson AZ, Mar. 2012.
- "Active Negative Refraction Index (NRI) Transmission Line with Gain," IEEE International Workshop on Antenna Technology (iWAT), Tucson AZ, Mar. 2012.
- "Electromagnetic Crystal (EMXT) Based THz Waveguide and Horn Antenna Fabricated by Polymer Jetting Quick Prototyping," 2011 IEEE Intl Workshop on Antenna

Technology (IWAT), March. 2011.

- "Biological Inspired RF Direction Finding (DF) Techniques," Government Microcircuit Applications and Critical Technology Conference (GOMAC), March, 2011
- "An Embedded Metamaterial Inspired Compact Multi-Layered Slot Antenna," Tri-Service Metamaterials Applications Conference, Dec. 2009.
- "All-dielectric Low-loss Terahertz Waveguide Fabricated by Rapid Prototyping," Tri-Service Metamaterials Applications Conference, Dec. 2009.
- "A compact metamaterial-inspired mmW CPW-fed antenna," International Workshop on Antenna Technology (iWAT) 2009.
- "Stepped-impedance based dual-band and dual-function balun for 20/44 GHz applications," mmWave special session in European Conference of Antenna and Propagation (EuCAP), Berlin, Germany, March 2009.
- "Fully Packaged 60 GHz Circular Polarized Antenna," mmWave special session in European Conference of Antenna and Propagation (EuCAP), Berlin, Germany, March 2009.
- "Measurements of Metamaterial Inspired, Electrically Small Antenna Systems" R. W. Ziolkowski, H. Xin, and C. Holloway, IEEE Antennas and Propagation Society / Union Radio-Scientifique Internationale (URSI) Symp., July 2008.
- "Radiation Characteristics of Monopole Antenna Embedded in Low Effective Index of Refraction ($n < 1$) Wire Media," URSI Symp., Jan. 2008.
- "Metamaterial-based Compact CPW-Fed Antenna for 44 GHz Applications," URSI Symp., Jan. 2008.
- "Electromagnetic Bandgap Waveguide (EBG) Phase Shifter for Low Cost Electronically Scanned Antennas (ESA)", H. Kazemi, J. A. Higgins, B. Herting, H. Xin, J. West, and J. Hacker, IEEE AP-S Symp., June 2007.
- "Incident Angle Dependence of Electromagnetic Crystal Surface Impedance", IEEE AP-S / URSI Symp., June 2004.
- "Low-Loss Monolithic Electromagnetic Crystal Surfaces with Planar GaAs Schottky Diodes", IEEE AP-S Symposium, June, 2003.
- "Tunable Millimeter-Wave Electromagnetic Crystal (EMXT) Waveguide Band-Stop Filter", IEEE AP-S Symposium, June, 2003.
- "Some Applications of Rectangular Waveguide with Electromagnetic Crystal (EMXT) Sidewalls", IEEE AP-S / URSI Symp., June 2002.

- **United States Patents (13 issued and 1 pending):** Several patents have led to the creation of a startup company in El Segundo, CA; while several others are being developed into communication and sensing products at Rockwell Collins and Teledyne Scientific Company**)**

[14] R. Bortolin, **H. Xin**, A. Berezin, J. Kudva, and H. Zhang, "Compact Embedded Antenna", US Patent filed, Oct. 8th, 2010.
[13] J. Cheung, and **H. Xin**, "Magnetic transducer with ferrofluid end bearings", US Patent No. 7,288,860, October 30th, 2007
[12] R. Rosenwald, N. Shah, D. Barker, W. Owens, and **H. Xin**, "Dynamic Control of Planck Radiation in Photonic Crystals", US Patent No. 7,257,333, August 14th, 2007
[11] J. Higgins, and **H. Xin**, "Waveguide Band-Stop Filter", US Patent No. 7,250,835,

July 31st, 2007
[10] M. Tanaka, K. Matsugatani, and **H. Xin**, "Multiple-Frequency Common Antenna", US Patent No. 7,145,518, Dec. 5th, 2006 (also issued in Japan)
[9] D. Barker, W. Owens, R. Rosenwald, N. Shah, and **H. Xin**, "Thermally Powered Tera-Hertz Radiation Source Using Photonic Crystals", US Patent No. 7,078,697, July 18th, 2006
[8] J. Higgins, and **H. Xin**, "Tunable Waveguide Filter", US Patent No. 7,068,129, June 27th, 2006
[7] **H. Xin**, J. Leonard, Q. Jiang, J. Garay, and C. Ozkan, "Particle Encapsulated Nanoswitch", US Patent No. 8,759,811, June 24, 2014
[6] J. Cheung, and **H. Xin**, "Multiple Magnet System with Different Magnet Properties", US Patent No. 6,861,772, March 1st, 2005 (also in several other countries including China and Mexico)
[5] J. Cheung, and **H. Xin**, "Multiple Magnet Transducer with Differential Magnetic Strengths", US Patent No. 6,812,598, November 2nd, 2004 (also in several other countries including China and Mexico)
[4] J. Cheung, and **H. Xin**, "Electrical Generator with Ferrofluid Bearings", US Patent No. 6,812,583, November 2nd, 2004 (also in several other countries including China and Mexico)
[3] J. Cheung, and **H. Xin**, "Electrical Generator with Ferrofluid Bearings", US Patent No. 6,809,427, October 26th, 2004 (also in several other countries including China and Mexico)
[2] J. Cheung, and **H. Xin**, "Electrical Power Generation by Coupled Magnets", US Patent No. 6,798,090, September 28th, 2004 (also in several other countries including China and Mexico)
[1] J. Cheung, and **H. Xin**, "Multiple Magnet Transducers", US Patent No. 6,768,230, July 27th, 2004 (also in several other countries including China and Mexico)

Internal Disclosures at University of Arizona (7 since 2008)

[11] A. Abdelrahman, H. Asadi, T. Bose, M. Liang, and **H. Xin**, "UA16-160 Cognitive HF S/W Radio & Tuned Compact Antenna," Provisional application – UA16-227, Aug. 2016.
[10] M. Liang, S. Cao, and **H. Xin**, "NOVEL AUTOMOTIVE RADAR USING 3D PRINTED LUNEBURG LENS," Provisional application – UA16-227, Aug. 2016.
[9] R. Witte, **H. Xin,** and D. Martin, "Image-Guided Microwave Therapy," Provisional application – UA15-176, Nov. 2015.
[8] **H. Xin**, Q. Tang, and M. Liang, "Metamaterials with Gain Compensation by Active Devices," Provisional application - UA16-104, Nov. 2015.
[7] **H. Xin**, M. Neifeld, M. Liang, and T. Harvey, "Millimeter-Wave Reflect-Array for Compressive Threat Detection in Security Screening Applications," Provisional application - UA15-155, Mar. 2015.
[6] **H. Xin**, and X. Yu, "RF and Ultrasound Hybrid System for Inventory Localization," Provisional application – UA14-026, Aug. 2013.
[5] **H. Xin**, R. Witte, X. Wang, and D. Bauer, "A Hybrid Microwave / Acoustic Communication Scheme," Provisional application – UA12-088, Mar. 2012.

[4] **H. Xin**, R. Witte, X. Wang, and D. Bauer, "Microwave Induced Thermoacoustic Imaging and Spectroscopy (TIS)," Provisional application – UA12-037, Sept. 2011.
[3] **H. Xin**, "Single Antenna Microwave Passive Direction Finding," Provisional application filed, Nov. 2009
[2] Z. Wu, J. Kinast, M. Gehm and **H. Xin**, "Rapid and Inexpensive Fabrication of Dielectric Photonic Structures for GHz and THz Spectra Ranges", Provisional application filed, May 22nd, 2008
[1] M. Gehm and **H. Xin**, "Rapid and Inexpensive Fabrication of Metamaterial Photonic Structures for MHz, GHz, and THz Spectral Ranges", Provisional application filed (UA 08-098), May 22nd, 2008

- **Book Chapters**

[1] M. Liang, and **H. Xin**, "Three-dimensionally Printed / Additive Manufactured Antennas," *Handbook of Antenna Technologies*, Edited by Z. N. Chen, *accepted*, Springer, 2015.

[2] Q. Tang, and **H. Xin**, "Active Metamaterial Incorporating Gain Device / Medium," *Engineering Electromagnetics: Analysis, Design and Optimization*, Edited by W. Yu, *in preparation*, Artech House, 2015

- **Refereed journal articles, published or accepted in final form publication (72 total, in IEEE Trans. Antennas and Propagation, IEEE Trans. Microwave Theory and Techniques, Nature Comm, PRL, IEEE AWPL, IEEE MWCL, APL, etc.)**

[81] AWPL Graphene paper;

[80] **H. Xin**, and G. Hanson, AWPL Special Cluster Editorial;

[79] Q. Tang, M. Liang, Y. Lu, P. Wong, G. Wilmink, D. Zhang, and **H. Xin**, "Microfluidic Devices for Terahertz Spectroscopy of Live Cells toward Lab-on-a-Chip Applications," *Sensors*, Vol. **15**, Apr. 2016.

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☐ University Service

Departmental committee(s)

- Comprehensive PhD Exam Committee (2006 - 2007)
- Graduate Recruiting and Awards Committee (Fall 2006 to 2011; **Chair** 2009 – 2012, 2013, 2014)
- Equipment and Computing Committee (Fall 2006 to 2010)
- Ad Hoc Graduate Student Recruiting Committee (volunteer based: Spring 2008 to 2010)
- Committee of Committee (2010)
- Peer Review Committee (2012 – 2015)
- Faculty Search Committee (2015)
- ECE Executive Committee (2015)
- Student Examination Committees (non-advisor)
    - Master Thesis Defense: 12
    - PhD Dissertation: 13
    - External PhD Dissertation: 2 (Korea University, Nanyang Tech. University)
    - PhD Preliminary: 15
    - PhD Comprehensive: 16

College committee(s)

- Graduate Studies Committee, College of Engineering (Fall 2006 to 2011)

University committee(s)

- University Academic Personnel Policy Committee (Fall 2007 to 2010)
- UA Defense Research Strategic Planning Executive Committee (2015)

Other committees (internal or external)

- Teaching Assistant Award Evaluation, College of Engineering, 2007
- Outstanding Senior Award Committee, 2013, 2015

☐ Past Research Assistants

Visiting and Research Scholars / Professors (9)

Dr. Liming Si (Sept. 2009 – Aug. 2011), now Assistant Professor at Beijing Institute of Technology, China
Dr. Tao Jiang (Jan. 2010 – July 2010), visiting PhD student from Zhejiang University, now at Hua Wei Company
Dr. Dexin Ye (Jan. 2011 – July 2011), visiting PhD student from Zhejiang University, now Assistant Professor at Zhejiang University
Mr. Si Li (Oct. 2012 – Sept. 2013), visiting PhD student from University of Science and Technology of China
Dr. Sivaram Arepalli (Jan. 2011 – Aug. 2011), visiting professor from Sungkyunkwan University, Korea and NASA Goddard Center
Prof. Wei Hua (Mar. 2012 – Feb. 2013), visiting associated professor from Sichuan University, China
Mr. Tao Qin (Nov. 2012 – Oct. 2014), visiting PhD student from Northwestern Polytechnical University, China
Prof. Guohong Du (Jan. 2013 – July 2013), visiting associate professor from Chengdu University of Information and Technology, China
Mr. Ying Li (Oct. 2013 – Sept. 2014), visiting PhD student from University of Science and Technology of China
Ms. Ershadi Seyyedehelnaz, (Dec. 2014 – Nov. 2015), visiting PhD student from Imam Khomeini International University of Iran
Prof. Xuefang Zhou (Sept. 2014 – Mar. 2015), visiting associate professor from Hangzhou Dianzi University, China
Prof. Chu-Yu Chen (July. 2015 – June 2016), visiting professor from National University of Tainan, Taiwan

Post-Doctoral Scholars (5)

Dr. Hongming Gu (2006), now at Samsung Company, Korea
Dr. Hualiang Zhang (2007 – 2009), now Assistant Professor at North Texas University
Dr. Yitian Peng (2007 – 2008), now Associate Professor at Southeast University, China
Dr. Kihun Chang (2009 – 2011), now at QualComm Company, San Diego
Dr. Jitao Zhang (2012 – 2014), now Post-Doc Scholar at University of Maryland, College Park
Dr. Xiong Wang (2013 – 2014), now Assistant Professor at Shanghai University of Science and Technology, China
Dr. Ahmed Abdelrahman (2014 – present)

PhD Dissertation Directed (6)

1. Dr. Lu Wang (May 2010), she is currently a Design Engineer at Freescale Company, Phoenix
2. Dr. Ziran Wu (May 2010), he is currently a Staff Scientist at Stanford Linear Accelerator National Laboratory (SLAC)
3. Dr. Rongguo Zhou (May 2010), he is currently an Antenna Engineer at Dockon Inc., San Diego
4. Dr. Xiong Wang (Aug. 2014), he is currently a post-doc at the University of Arizona / Assistant Professor at Shanghai Science and Technology University, China
5. Dr. Ian Zimmerman (Aug. 2014), he is currently at Longwave Photonics Inc., Fremont CA
6. Dr. Te-chuan Chen (Dec. 2015)

Master Thesis Directed (9)

1. Te-Chuan Chen (2008), he is currently a PhD student at the University of Arizona
2. Lu Wang (2010), she is currently a Design Engineer at Freescale Company, Phoenix
3. Ziran Wu (2010), he is currently a Staff Scientist at Stanford Linear Accelerator National Laboratory (SLAC)
4. Rongguo Zhou (2010), he is currently an Antenna Engineer at Dockon Inc.
5. Pouya Talebbeydokhti (2011), he is currently at Intel Company
6. Tenner Lee (2013), he is currently at Raytheon Company
7. Rafael Sabory Garcia (2014), he is currently a PhD student at the University of Arizona
8. Kokou Gbele (2014), he is currently a PhD student at the University of Arizona
9. Bruce Webb (2015), he is currently at Raytheon Company

Undergraduate Students (more than 60 since 2005)

Directed / mentored / sponsored 17 senior capstone team projects since 2005.

- **Current Research Assistants**

Visiting and Research Scholars / Professors (2)

Ms. Seyyedehelnaz Ershadi (Dec. 2014 – Nov. 2015), visiting PhD student from Imam Khomeini International University, Iran.
Prof. Chu-Yu Chen (July. 2015 – June 2016), visiting professor from National University of Tainan, Taiwan

Post-Doctoral Scholars (1)

Dr. Ahmed Abdelrahman (2015 -)

PhD Students (9)

Mr. Min Liang (expected graduation date – Aug. 2015)
Ms. Xiaoju Yu (expected graduation date – Jan. 2016)
Mr. Mingguang Tuo (expected graduation date – Jan. 2016)
Mr. Qi Tang (expected graduation date – Aug. 2016)
Mr. Junqiang Wu (expected graduation date – Aug. 2017)
Mr. Adnan Kantemur (expected graduation date – Jan. 2018)
Mr. Siddhartha Sirsi (expected graduation date – Jan. 2018)
Mr. Ryan Sessions (expected graduation date – June 2019)
Mr. Elie Issac (expected graduation date – June 2019)

MS Student

Undergraduate Students (13)

Supervising 2 senior capstone teams (6 students each) and 1 undergraduate research assistant (Mr. John Gentry)