Faculty Personal Vitae

Professor Jay Weitzen

A. EDUCATION AND EXPERIENCE

1. Education

BSEE University of Wisconsin; Madison Wi, Dec. 1977, High Honors
MSEE University of Wisconsin; Madison Wi, Jun..1979, Bacon Fellowship
Ph.D University Of Wisconsin; Madison Wi., Jun.1983, UW Fellowship
other Graduate Work, Stanford University, Courses 1979-1980

2. Academic Experience

1986-present: University of Mass Lowell, Department of Electrical and Computer Engineering, Rank: **Professor, Department Chair**

- (August 2021-present) ECE Department Chair
  - Run Department of 35 full-time faculty, 3 full time staff and 850 students
- (2015-2021) ECE Associate Chair, Undergraduate Coordinator, Transfer coordinator.
  - Responsible for the Teaching Schedule
  - Responsible for developing the EE/CpE ABET Self Study guides.
  - Responsible for meeting with incoming transfer students
  - Evaluation of Courses for Transfer
  - Develop Articulation agreements with local Community Colleges
- Research Interests
  - Femtocell/Smallcell Networks
  - UHF Wireless Propagation and Cellular/PCS Communication
  - Performance of Navigation systems for timing and aircraft
  - Position Location, Tracking and Location Based Services
  - VHF Beyond Line-of-Sight Communication
  - HF Communication
  - Resilient Position, Timing and Navigation Systems
  - Meteor Scatter Communication Systems
  - DSP Algorithm Development
  - Performance of Robotic and sUAV communication channels

- Sponsored Research Efforts totaling over $2.5M
- Teaching Areas: Wireless Systems, Telecommunications, Digital and Analog Communication, Stochastic Processes, Digital Signal Processing, Signals and Systems, Circuits, Data Communication

- Helped to restructure the First-year program and bring "Lab in the Box" technology to UML.
- Established UML as member of Global Wireless Education Consortium (GWEC). National organization to help engineering schools develop programs in wireless engineering.
- Recognized Internationally for work in wireless propagation and communication, lectured in several countries.
- 100+ publications including 35 journal papers, 4 monographs, 2 US Patents
- Associate Editor of IEEE Transactions on Communication 1990-1994
- Associate Editor of Radio Science 2009

2. Industrial Experience

2021-2024 Consultant Si2, Billerica Ma

- Helped them design and implement summer intern program that has hired at least 6 UML engineering graduates.

2001-2018 Consultant Airvana/Commscope, Chelmsford Ma

- Helped them develop tools and measurement techniques to analyze performance of individual small cells and to assess the overall performance of the network.
- Developed automated indoor RF small cell planning tool to reduce the time from initial request to preliminary RF design and quote.
- Developed Robotic Automated Coverage monitoring tool to autonomously explore and map RF coverage in a building.

1995-1996 Industrial Sabbatical at GTE Laboratories, Waltham Ma.

- Developed techniques for the integration of measured cellular data and predictions into the GTE GRANET Radio Planning Tool
- Developed Improved propagation prediction models and techniques to tune and calibrate the models.
- Developed and executed experiments to compare polarization diversity and space diversity in an operational cellular system.

1983-1987 Signatron Inc, Lexington Ma, Staff Engineer, Project engineer and manager

- Project Scientist on USAF Effort to characterize high latitude VHF communication channel.
- Responsible for meteor scatter communication engineering area
- Developed and simulated algorithms for new generation DSP based meteor scatter modem.
- Developed concepts and performed system engineering on S-1098 meteor scatter hardware simulator delivered to Rome Air Development Center
- System Engineer on Vehicle Communication Internal Research program. Developed system concepts, specifications, and link budgets

- Research Engineer on Effort to Characterize Under Ice Acoustic Communication Channel
- Developed basic architectures for survivable communication systems.

1979-1980 Hewlett Packard Co, Santa Clara Ca, Software development engineer

- Developed Real Time Software for 5423a Fast Fourier Transform signal analyzer currently in use in U. Mass Lowell Mechanical Engineering Department for Modal Analysis

3. PROFESSIONAL/ RESEARCH ACTIVITIES

1. Professional Activities

Professional Society Membership

- Founding member of Global Wireless Education Consortium (GWEC)
- Institute of Electrical and Electronics Engineers **(Senior Member IEEE)**,
  - **Associate Editor for Fading Channels, IEEE Transactions on Communications (1989-1994)**
  - Member Technical Program Committee IEEE COMCAS 2013, 2015,201,2019,2021,2024
  - Member Communication Society, Communications Theory Group
  - Member Vehicle Technology Society
  - Guest lecture to Boston Section IEEE Communication Society
  - Guest lecture to Boston Section IEEE Antennas and Propagation Society
  - Session Chair and Organizer, 1990, 1991, 1992 MILCOM Conf
  - Session Chair 1998 Personal Indoor, Mobile Radio Conf
- American Geophysical Union
  -Reviewer for Radio Science
  - Associate Editor for Radio Science (2009)
- American Meteor Society
- Institute on Navigation
- Radio Technical Commission for Aeronautics
  - Member Committee SC-176 charged with developing standards for LORAN-C for aircraft navigation
- Member Tau Beta Pi, Currently Faculty Adviser
- Member Eta Kappa Nu

Editorial and Referee Activities

- Associate Editor (Fading Channels) , IEEE Transactions on Communication: 1990-1994
- Reviewer for Radio Science
- Reviewer IEEE Transactions on Antennas and Propagation

- Reviewer for IEEE Transactions on Communication
- Reviewer for National Science Foundation
- Reviewer for IEEE Transactions on Vehicular Technology
- Associate Editor For Wireless Communication for Radio Science (2009)
- Member Technical Program Committee IEEE COMCAS 2013,2015,2017 conference

Professional Honors and Awards

- IEEE Life Senior Member (2021)
- University of Lowell Professional Development Award for Outstanding Research 1987, 1988
- Promoted to Senior Member IEEE, 1989
- ECE Department Teaching Award 2011,2019

3. Other Professional Activities

- Member IEEE-P-1952 Standards working group in resilience of position, navigation, and timing (PNT). Member of working groups on power system and telecommunications resiliency.
- Airvana, now part of CommScope, 2001-2019 Consultant on macrocell and femtocell network performance
- GTE Laboratories: Industrial Sabbatical 1995-1996
- Nextwave Wireless 1996-2000 Consultant on Development of Wireless PCS radio planning tool.
- Department of Transportation Volpe Center, Summer 1993, 1994. Worked with Volpe Staff on hybrid Loran-C/GPS navigation systems for aircraft non-precision approach. Helped develop first automated tracking system for ships approaching Panama Canal
- Delos Corporation, Technical advisor on system to provide workers on a process line with wireless connectivity to each other and to supervisors, 1998-1999, Joint University/Industry incubation program.
- University of Lowell Center for Atmospheric Research, Faculty Researcher, 1986 to 1995
- Signatron Inc, Lexington Ma, Consultant for Meteor scatter communication research, 1986-1988
- Transtrack, Marion Ma, Consultant for development of meteor scatter communication for truck location, 1989
- Meteor Communication Corporation, Kent, Wa, Consultant Developing next generation techniques for meteor scatter communication using vehicles 1991-1993

4. FUNDED RESEARCH ACTIVITIES

1. Grants and Contracts at University of Massachusetts Lowell

Phase 1 STTR Tri-Band Antenna system for SM3
• Sponsor: Phase 1 STTR, Si2, US MDA
• Principal Investigator: Jay Weitzen, Corey Shemelya
• Analyze and design novel triband Antenna
• Funding: $51 k; Period of performance: 2024, Phase 2 proposal at end

Hybrid eLoran/GPS RAIM navigation for GPS denied navigation.
• Sponsor: Phase 1 STTR, Helen Systems, USAF AFWRX
• Principal Investigator: Jay Weitzen
• Develop software simulation to show how to integrate eLoran and GPS into a receiver including RAIM to support GPS denied and GPS exploited environments
• Funding: $51 k; Period of performance: 2021, Phase 2 proposal currently pending

Decisive; Use of standardized sUAV (drones) designed for outdoors in subterranean and indoors
• Sponsor: US ARMY, HEROES, through NERVE
• Co-Principal Investigator: Jay Weitzen (Holly Yanko PI)
• Understand and test standard US Army Drones in subterranean and indoor environments in particular the performance of the telemetry and control communication channels.
• Funding: $100 k; Period of performance: 2021,2022 Supporting 1 MS Thesis

Tools for Testing and Analysis of 3G and 4G Small Cell Performance
• Sponsor: Airvana, Chelmsford Ma
• Principal Investigator: Jay Weitzen
• Develop and use automated software platform and tools to collect and analyze data to determine performance of femtocell networks deployed at major operators including Sprint.
• Funding: $850 k; Period of performance: 2013-2019, extendable each year (~100k/year)
• Student Involvement: 4 MS, 3 PhD

Tools for Testing and Analysis of 1xEV-DO Performance Data
• Sponsor: Airvana, Chelmsford Ma
• Principal Investigator: Jay Weitzen
• Develop and use automated tools to collect and analyze data to determine performance of 1xEV-DO data networks.
• Funding: $950,000; Period of performance: 2003-2013
• Student Involvement: 12 MS, 3 PhD/Deng

TDOA Position Location System For Locating GSM Phones (Phase 1 SBIR)

• Sponsor: USMC through Signatron Technology Corporation
• Principal Investigator: Jay Weitzen
• Program Objectives: Develop a very low cost TDOA for locating GSM phones using tones and TDOA
• Funding: $35,000; Period of performance: 2002-2003
• Student Involvement: 1 MS, 1 undergraduate

Personal Locator System for Alzheimer's patients Phase II (STTR)
• Sponsor: National Institute on Aging, Signatron Technology Corporation
• Principal Investigator: Jay Weitzen; Karen Meliello, May Futrell (Nursing)
• Program Objectives: Develop a very low cost, wide area personal locator for finding wandering geriatric patients,
• Funding: $149,000; Period of performance: 1998-1999
• Student Involvement: 1 D.Eng., 1 undergraduate

Support of Panama Canal Communication and Tracking System
• US Department of Transportation, Volpe Center Cambridge
• Principal Investigator: Jay Weitzen
• Program Objectives: Provide support in the deployment of a new generation VHF communication system to support vessel tracking in the Panama Canal
• Funding: $8,000; Period of performance: 1998-1999

Personal Locator System for Alzheimer's patients Phase I (STTR)
• Sponsor: National Institute on Aging, Signatron Technology Corporation
• Principal Investigator: Jay Weitzen;
• Program Objectives: Develop a very low cost, wide area personal locator for finding wandering geriatric patients,
• Funding: $35,000; Period of performance: 1994-1995
• Student Involvement: 1 D.Eng.

Analysis of DSC Protocol For Vessel Tracking Systems
• Sponsor: US Department of Transportation, VNTSC
• Principal Investigator: Jay Weitzen;
• Program Objectives: Investigate performance of DSC protocol for use in automatic dependent surveillance for vessel traffic systems
• Funding $25,000; Period of performance: FY 1995
• Student Involvement: 1 MS

HF Groundwave Identification
• Sponsor: US. Navy (Navy Undersea Systems Center (from Signatron, Inc.)
• Principal Investigators: J. Weitzen, G. Sales
• Program Objectives: Develop algorithm for determining whether a signal arriving at a submarine is ground wave or sky wave
• Funding: $19,000; Period of Performance FY-1994

Hybrid GPS/Loran-C navigation availability
• Sponsor: Department of Transportation, VNTSC
• Principal Investigator: Jay Weitzen;
• Program Objectives: Investigate availability and integrity of hybrid GPS/Loran-C system as sole means navigation for small aircraft.
• Funding $10,000; Period of performance: FY 1994
• Student Involvement: 1 MS

High Latitude Meteor Scatter Research
• Sponsor: Air Force Geophysics Laboratory/Northwest Research:
• Principal investigators: Bodo Reinisch, Jay Weitzen;
• Program Objectives: Investigate high latitude effects on meteor scatter propagation and communication and in particular to investigate the effect of polar cap absorption on VHF high latitude scatter communication. Part of a larger grant to the Center For Atmospheric Research;
• Funding: $80,000.00; Period of performance: 1987,
• Students involved: 1 doctoral, 1 undergraduate

High Latitude Radio Propagation Program Phase II
• Sponsor: Air Force Geophysics Laboratory
• Principal Investigators: Jay Weitzen, Bodo Reinisch, Gary Sales
• Program Objectives: Continue the research into the effect of Polar Cap Absorption on high latitude VHF radio communication and create a parallel HF radio link to compare the effect on the two different radio techniques.
• Total Funding: $600,000.00, Period of Performance: 1988-1991,
• Student Involvement: 1 doctoral, 1 undergraduate

High Latitude Meteor scatter Modeling
• Sponsor: US. Navy Ocean Systems Center;
• Principal Investigator: Jay Weitzen;
• Program Objectives: Used data from the AFGL test bed to calibrate the METPRED model developed by the P.I. The model was used to predict the performance of several Navy high latitude meteor scatter communication links.
• Funding: $25,000., Period of performance: 1988,
• Student Involvement: 1 undergraduate

Short Range Meteor Scatter Communication Study
• Sponsor: USAF Rome Air Development Center, Subcontract from Signatron.
• Principal Investigator: Jay Weitzen;
• Program Objectives: Investigate VHF MB communication at short range and • determine techniques to improve performance.
• Funding: $26,000; Period of Performance, 1988-1989,
• Student Involvement: 1 undergraduate

Space Diversity in Meteor Scatter Networks
• Sponsor: Signatron, Inc.;
• Principal Investigator: Jay Weitzen;
• Program Objectives: Develop models to predict inherent space diversity in a network of interconnected VHF MB receivers.
• Funding $35,000; Period of performance: 1989.
• Student Involvement: 1 undergraduate

Ground Illumination and Space Diversity Model
• Sponsor: GE Aerospace.
• Principal Investigator: Jay Weitzen;
• Program Objectives: Develop models to predict space diversity and probability of multiple responses in a network of meteor scatter receivers.
• Funding $15,000; Period of performance: 1990.

VHF beyond line of sight modeling
• Sponsor: Boeing Aerospace
• Principal Investigator: Jay Weitzen;
• Program Objectives: Develop improved models to predict performance of a network of beyond line of sight VHF communication receivers
• Funding $85,000; Period of performance: FY 1991.
• Student Involvement: 1 undergraduate, 1 graduate student

SICBM Communication Performance Prediction
• Sponsor: GE Aerospace;
• Principal Investigator: Jay Weitzen;
• Program Objectives: Attempt to Predict performance of a series of communication links and develop criteria for evaluating performance predictions.
• Funding $10,000; Period of performance: 1990,
• Student Involvement: 1 undergraduate

High Latitude Radio Propagation Program Phase III;
• Sponsor: Air Force Geophysics Laboratory;
• Principal Investigators: J. Ostergaard, J. Weitzen, B. Reinisch, G. Sales.
• Program Objectives: Continue the research into the effect of Polar Cap Absorption and auroral absorption on HF and VHF propagation.
• Total Funding: $650,000.00, Period of Performance: 1991-1993,
• Student Involvement: 1 post doctoral, 1 doctoral, 1 undergraduate

Meteor Scatter Communication Research
• Sponsor: Meteor Communication Corporation
• Principal Investigator: Jay Weitzen;

• Program Objectives: Develop network techniques for commercial mobile VHF communication terminals to allow tracking for a fleet of up to 100,000 trucks.
• Funding approximately $50,000/year; Period of performance: 1991,1992:
• Student Involvement: 1 doctoral

LF atmospheric noise model
• Sponsor: Department of Transportation, VNTSC
• Principal Investigator: Jay Weitzen;
• Program Objectives: Develop a real time technique to simulate atmospheric noise at LORAN frequencies and to use system to characterize Loran-C and VLF navigation Beacon Receiver Performance.
• Funding $40,000; Period of performance: FY 1992, 1993,
• Student Involvement: 1 MS

2. Grants and Proposals Submitted but not Funded

Phase 2 STTR Tri-Band Antenna system for SM3
• Sponsor: Phase 1 STTR, Si2, US MDA
• Principal Investigator: Jay Weitzen, Corey Shemelya
• Analyze and design novel triband Antenna
• Funding: $51 k; Period of performance: 2025, Phase 2 proposal at end

D. ACADEMIC AND PROFESSIONAL PUBLICATIONS

Publications

Books and Monographs:

Weitzen, Jay, Raghothaman, Balagi and Srinivas, Annand , "Managing Coverage and Interference in UMTS Femtocell Deployments" in Deploying UMTS and LTE, March 2010, CRC press

Weitzen, J.A, Wallace M.S. Antenna Issues in the deployment of Next Generation Wireless Systems. Klewer Academic Publishers, Boston, Ma, 2000

Weitzen, J.A., Meteor Scatter Communication: A New Understanding, Chapter 1 of "Meteor Burst Communications Theory and Practice", Edited by D.L. Schilling, John Wiley, New York, 1993, pages (9-58)

Weitzen, J.A., J.D. Larsen, and R.S. Mawery, "Network Contention Issues in the Design of very Large Meteor Scatter Networks for Vehicle Tracking and Communication", Wireless Communications, Future Directions, ed J. Holtzman and D. Goodman, Klewer Academic Publishers, Boston, Ma, 1993

US Patents:

Parl, S.A., Bussgang J.B.,Weitzen, J.A., and J.A. Zagami, A novel technique for position location using angle or arrival and time difference of arrival, US Patent 5,883,598, March 16, 1999

Parl, S.A., Bussgang, J.B, Weitzen, J.A and J.A. Zagami, "Position Location System and Method, US Patent 6,259,404, B1, July 10,2001

Journal Papers:

Mohamed O. Shammat, Bodo W. Reinisch[1], Ivan Galkin, Philip J. Erickson, Jay A. Weitzen, William C. Rideout "Investigating the Applicability of the Peak Density Thickness Parameter over the Equatorial Region", *Atmosphere* **2025**, *16*(1), 10; **https://doi.org/10.3390/atmos16010010**, December 2024

Mohamed O. Shammat, Bodo W. Reinisch[1], Ivan Galkin, Philip J. Erickson, Jay A. Weitzen, William C. Rideout. Characterizing Plasma Peak Density Thickness in the Ionosphere: A Single-Site Multi-Instrument Study Radio Science, 02 January 2024: https://doi.org/10.1029/2023RS007658

Mariaux, Edwin, Weitzen, J.A., Norton, Adam, Simulation of the Effect of Correlated Packet Loss for sUAS Platforms operating in Non-Line-Of-Sight Indoor Environments, Drones Journal, Drones, 2023, 7 (7), p485, https://doi.org/10.3390/drones7070485

Mariaux, Edwin, Weitzen, Jay.A., Norton, Adam, and Yoni, Naye, Design of non-Destructive Test Methodologies for sUAS Communication Links Operating in Indoor and Subterranean Environments, Journal of American Society of Test and Measurement, June 2023. 10.1520/JTE20220394

Wang, Jiao, Weitzen, J.A., Bayat, O, Sevendik, V, Li, Mingzhe, Performance Model for Factory Automation in 5G networks, Journal of Multimedia Tools and Applications, Springer Verlag, November 2022,

Wang, Jiao, Jay Weitzen, Oguz Bayat, Volkan Sevendik, and Mingzhe Li, "Interference coordination for millimeter wave communications in 5G networks for performance optimization", EURASIP Journal on Wireless Communications and networking, February 2019,

Wang, Jiao, Jay Weitzen, Oguz Bayat, Volkan Sevindik, Mingzhe Li, "Joint Interference Coordination approach in femtocell networks for QoS performance optimization", International Journal of Communication Systems, January 2017,

Weitzen, J.A. and Grosch T. "Measurements of Inter-Femtocell Reverse link interference", Journal of Electrical Engineering, Vol 3, Number 4, April 2016

Jay Weitzen, Nathan Sutter, Rachel Wakim, and Ali Alkhatabih, "First Measurements of Cloud-RAN LTE Smallcells in an Indoor Stadium", Journal of Selected Areas in Telecommunications, April 2016

Weitzen, J.A. and Wakim R.E, "Using Informatics to Manage and Measure Performance of Large Femtocell Networks", Journal of Data Analysis and Information Processing (JDAIP) April 2015

Jay Weitzen, Erik Anderland, Mingzhe Li, Vedat Eyhlebu, "Deploying Large Femtocell Networks Approaching 1 Million Units", Proceedings of the IEEE, November 2013

Volkan Sevindik, Oguz Bayat, Jay Weitzen, Scheduler design for traffic classification in CDMA2000 1xEVDO network. Wireless Networks 01/2011; 17:1731-1744.

Siva Sivananthan, Jay Weitzen, "Sub-optimality of Prefilter in Deeply Coupled Integration of GPS and INS," *Journal of the Institute of Navigation*, Vol. 57, No. 3, Fall 2010

Siva Sivananthan, Jay Weitzen, "Improving Optimality of Deeply Coupled Integration of GPS and INS," *ION Technical Interchange Meeting*, January 2009, pp 426 – 433

Weitzen, Jay A. and Grosch, Theodore, "Comparing Coverage Quality for Femtocell and Macrocell Broadband Data Services", IEEE Communications Magazine, January 2010

Fagen, D, Vicharelli P.A. and Weitzen, J.A: "Automated Coverage Optimization in Wireless Networks". IEEE Transactions on Vehicular technology, March 2009

Weitzen, J.A. and T. Lowe, "Spatial and Angular correlation properties of Log-N shadowing at 1980 MHz" IEEE Transactions on Vehicular Technology, Mar 200 Vol 51, No 2, pp 265-273

Carroll, J.V., and J.A. Weitzen, GPS and Loran-C hybrid Approach Navaid for General Aviation, GPS Magazine, Summer 1997.

Cannon, P.S., J. A. Weitzen, A preliminary study of the relative impact of meteor scatter and other long-distance high latitude propagation modes on VHF communication systems, Radio Science, July 1996

Weitzen, J.A., J.V. Carroll, and H.J. Rome, RAIM Availability of GPS Augmented with Loran C and Barometric Altimeter for use in Nonprecision Approach, Navigation, J. Institute of Navigation, Summer 1996

Mawrey, R.S., and J. A. Weitzen, Use of Phased Array Antennas for High Performance Meteor Scatter Communication, IEEE Transactions on Communication, Vol 43, No.4, April 1995, pp 1467-1477

Ralston, W.T, and J. A. Weitzen, Spread Spectrum Multiple Access for Meteor Burst Communication, IEEE Transactions on Vehicular Technology, Vol 44, No 2., May 1995, pp 280-291

Weitzen, J. A., J. V. Carroll and B. T. Dao, "Use of Simulated Atmospheric Noise in the Calibration and Characterization of Loran-C receivers for airborne navigation", Journal Institute on Navigation, vol. Vol. 40, 2, Summer, pp 1993.

Weitzen, J.A., J.V. Carroll, B.T. Dao, Real Time Simulation of VLF Atmospheric Noise for use in the Calibration and Characterization of LORAN-C Receivers for Aircraft Navigation, Simulation Magazine, Society for Computer Simulation, May 1993

Ralston, W. T., J. A. Weitzen and J. C. Ostergaard, "Distribution of underdense meteor trail duration's and duty cycles, and applications to meteor scatter communication system design", Radio Science, vol. 28, No. 3, September-October, pp 747-759, 1993.

Ralston, W. T., J. A. Weitzen and J. C. Ostergaard, "Distribution of underdense meteor trail duration's and duty cycles, and applications to meteor scatter communication system design", Radio Science, vol. 28, No. 3, September-October, pp 747-759, 1993.

Weitzen, J. A., Performance of Short- and Long-Range Meteor Burst Communication With Different Antennas, IEEE Journal of Special Topics in Communication, JSAC-10, Vol. 3 April, 1992 pp. 491-497

Ostergaard, J.C., J.A. Weitzen, S.W. Li, P.M. Bench, A.D. Bailey, A.T. Coriaty, and J.A. Katan, Effect of High latitude Absorption on High Latitude Meteor Scatter Communication, Radio Science, July-August 1991, pp 931-943

Weitzen, J.A. S. Bourque, P.M. Bench, A.D. Bailey, J.C. Ostergaard, Distributions of Meteor Trail Amplitudes and Its Application to Meteor Scatter Communication System Design, Radio Science, March-April 1991 pp 451-458

Weitzen, J. A., A Study of Ground Illumination Pattern of Meteor Scatter Communication, IEEE Trans. on Comm., vol. Com-38, No 4., April 1990, pp 426-432

Sheridan, P. and J. A. Weitzen, Evaluation of Network Planning and Design., IEEE Network Magazine. No, 11, November 1989, PP 11-16

Weitzen, J. A., Effects of polarization Coupling Loss Mechanism on Design of Meteor Scatter Antennas for Short and Long Range Communication, Radio Science, Vol. 24, No 4, pp. 549-558, August 1989

Weitzen, J. A., Meteor Scatter Propagation: An Overview, Invited Paper, IEEE Transactions on Antennas and Propagation, Vol. 36, No 12, pp. 1813-1819, December 1988

Weitzen, J. A., Communicating Via Meteor Burst at Short Ranges, IEEE Transactions on Communications, IEEE Transactions on Communications, Vol. 35, No 11, November 1987, pp. 1213-1218

Weitzen, J. A., M.J. Sowa, J. Quinn, and R.A. Scofidio, Characterizing the Multipath Profile and Doppler of the High lJBurst Communication Channel, IEEE Transactions on Communication, Vol. 35, No 10, October 1987, pp. 1050-1058

Weitzen, J. A., A Data Base Approach to Analysis of Meteor Burst Data, Radio Science, Vol. 22, Number 1, January 1987, pp. 133-140

Weitzen, J. A., Predicting the Arrival of Meteors Useful for Meteor Burst Communication, Radio Science, Vol. 21, Number 6, November 1986, pp. 1009-1020.

Weitzen, J. A., W. P. Birkemeier, and M.D. Grossi, High Resolution Multipath Measurements on the Meteor Scatter Channel, Radio Science, Vol. 19, Number 1, January 1984, pp. 375-381

Weitzen, J. A., W.P. Birkemeier, and M.D. Grossi, An Estimate of the Capacity of the Meteor Burst Channel, IEEE Transactions on Communications, Vol. 32, Number 8 August 1984, pp. 972-976

Weitzen, J. A., and W. P. Birkemeier, The Skew Estimator Method for Aligning Troposcatter Antennas and Synchronization of Master Clocks, IEEE Transactions on Instrumentation and Measurement, Vol. 31, Number 1, Feb. 1982

Conference Papers

Mariaux, Edwin and Weitzen, J. A..”Robustness of Couzin Swarming to Packet Loss and Methods to Improve Robotic Swarm Communication” DOI:10.1109/COMCAS58210.2024.10666239 Conference: 2024 IEEE International Conference on Microwaves, Communications, Antennas, Biomedical Engineering and Electronic Systems (COMCAS)

Dixon, Jon Nathan Blood, Nichoas Haglof, Nicholas Chillemi, James Martin, Adam Probst, Jonathan Rasche, Anthony Jones, William Vourazeris, Jay Weitzen, Kris Kim, et al, et al Flight Test Results for RFSoC-Based UAS Sensor Payload, Proceedings GOMAC 2024 Conference, March 19-22, San Diego Ca

Dixon, Jon, et al, Flight Test Results for Ultra-Long Endurance UAS Low-Cost Direction-Finding Sensor Payload, Proceedings GOMAC 2023 Conference, March 20-23, 2023, San Diego Ca

Kaminski, John, Stein, David, Weitzen, Jay A. “Removing the RF Fingerprint: “A Least Squares Approach to Compensate for a Device's Hardware Impairments”, Proceedings IEEE MILCOM 2022 Conference, November 2022

Shamat, Mohammed and Weitzen, Jay A., Vary-Chap Model Performance on the Topside Electron Density Distribution over the Equatorial Latitudes. 43rd COSPAR Scientific Assembly. Held 28 January - 4 February 2021. Abstract C1.1-0042-21 (oral), id.607.

Decker, B., Weitzen, J.A., Vogel, J. ““Adaptive Multi-Target Tracker”, Proceedings Tri-Service Radar Symposium, 17 November 2021, Virtual, https://discover.dtic.mil/.

Weitzen, Jay A and Dohn Bowden, Personal learning devices and remote labs: Applying what we learned in the pandemic to post pandemic education, Proceedings 2022 ASEE NE regional meeting, 2nd best paper.

Bowden, D. A., Phillips, C., Weitzen. J.A. Teaching Circuits and Electronics laboratory-Beyond the Brick and Mortar Walls, Proceedings ASEE Annual Conference, Tampa, FL, June 2019

Weitzen, J.A. and Wakim, R.E, “Measuring and mapping multi-user cell-virtualization performance in a cloud-RAN small cell network”, Proceedings IEEE International Conference on Microwaves, Antennas, Communications and Electronics Systems, 6 Nov. 2017, Tel Aviv Israel

Wakim, R.E and Weitzen, J.A. “An autonomous system for high resolution mapping of indoor wireless coverage”, Proceedings IEEE 28th Annual International Symposium on Personal, Indoor, and Mobile Radio Communications, (PIMRC) 1-5 October 2017, Montreal Canada

Jay Weitzen, Rachel Wakim and Erin Webster. Comparison of Coverage Quality RSRP,CQI, SINR for coordinated and uncoordinated LTE Small Cell

Clusters, Proceedings IEEE COMCAS 2015 Conference, Tel Aviv Israel, November 2015

Jay Weitzen and Theodore Grosch, Measurements of Inter-Femtocell Reverse Link Interference, Proceedings 2015 International Conference on Wireless Networks, July 17-21, 2015, Las Vegas NV

Jay Weitzen, Dave Willis, Eric Maase, Steve Johnston, M. D. Rashid , Restructuring Our First-Year Introduction to Engineering Sequence at University of Massachusetts Lowell, Proceedings 2015 First Year Engineering Education Conference

Weitzen, J.A. Webster, E. and A. Rux, "Flipping ECE Laboratories using Laboratory in the Box", Proceedings 2014 American Society of Engineering Education National Meeting, June 4-6, 2014, Indianapolis IN.

Weitzen, J.A, Webster, E. and A. Rux, "University of Massachusetts Lowell Laboratory in the Box for First Year ECE Students", Proceedings First Year Engineering Conference, Aug 1-3, 2013, Pittsburgh PA

Jay Weitzen and Rachel Wakim, Managing Large Femtocell Networks with in excess of 1 Million Units, Proceedings IEEE COMCAS conference, Nov. 1-3, 2013, Tel Aviv Israel

Volkan Sevindik; Jiao Wang; Oguz Bayat; Jay Weitzen, "Performance Evaluation of a Real Long-Term Evolution Network", IEEE Conference on Local Computer Networks, 22-25, October 2012, Clearwater Florida

Jay Weitzen and Rachel Wakim, Constraints of operating femtocells co-channel macro networks, Proceedings of IEEE COMCAS 2011 Conference, Tel Aviv Isr Nov 2011

Volkan Sevindik, Oguz Bayat, Jay Weitzen **,** Performance analysis and simulation of packet scheduling algorithms in a femtocell environment. Conference Proceeding**:** 01/2011; In proceeding of: 2011 Spring Simulation Multi-conference, SpringSim '11, Boston, MA, USA, April 03-07, 2011. Volume 2: Proceedings of the 44th Annual Simulation Symposium (ANSS).

Volkan Sevindik, Oguz Bayat and Jay Weitzen Traffic differentiation for BE users in CDMA 1xEVDO networks, Multi-media tools and networks, Springer Verlag, July 2010

Weitzen, Jay, "Advantages of Femtocells for Mobile Broadband Data Services", Airvana White Paper, presented **at** 2009 Femto Forum, London United Kingdon, July 2009

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E. SERVICE ACTIVITIES

1. Activities Related to Professional Field

2015,2017,2019 Technical Program Committee, IEEE COMCAS Conference
2018,2019,2017 Reviewer ASEE Conference

2. Committee Activities

Department Committees

-Electrical Engineering Personnel Committee (Chair 2014)
-Electrical Engineering Doctoral Committee
-Electrical Engineering Communication and Systems Group

College Committees

- College of Engineering Dean Search Committee
- College of Engineering First Year Restructuring Committee (chair)
- College of Engineering Maker Space Design Committee

3. Other Service to the University and Community

- Boy Scout STEM Career Expo, Nuclear Science and Engineering: Host two groups of Boy Scouts 8-hour Nuclear Science and Engineering Workshop at UML

- Added Service-Learning Component to the Class 25.108 (Introduction to Engineering II in which first year students develop simple projects for handicapped students as part to the larger assistive technology program.

- Faculty Advisor to Jewish Student Organization at U. Mass Lowell (through 1995) In this role, I have been working with Rabbi's at Temple Beth El in Lowell and students to re-energize the Jewish student organization at U. Mass Lowell

- Volunteer Scientist for Museum of Science/NSF "Science by Mail" program in which volunteer scientists correspond with grade school level students to encourage them to become interested in science and engineering

- Community Boating of Boston, member of Corporation Board. Responsible for advising the board of directors of the nation's largest and first public sailing club, about financial and policy matters.

F. INSTRUCTION RELATED ACTIVITY

1. Courses Taught

- Computer Science Department:

- Data Communication (Grad and Undergraduate) 91.563,91.564

- Electrical and Computer Engineering:
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  - Circuits 1 and 2 16.201, 16.202
  - Signals and Systems (I and II) 16.362, 16.363
  - Communication Theory 16.543, 16.439
  - Digital Signal Processing 16.510
  - Probability and Random Processes 16.584
  - Wireless Systems 16.582, 16.418
  - Coding and Information theory 16.548
  - Intro to Engineering 25.107,25.108

2. Other Activity and Accomplishments Related to the Instructional Function

- **Restructured ECE First Year Intro Course**

  - Working with Analog Devices and Digilent we developed the UML version of the "Lab in the Box", in which first year ECE students will purchase their complete workbench. We are working to develop curricula for first, second, and third year students using the Lab in the Box.

- **Developed Course 16.363 Signals II**

  - Originally developed to satisfy ABET requirements for a component of probability and statistics in the undergraduate program and the needs of undergraduate electrical engineers to understand the random nature of signals and noise, this course has been running since spring of 1993. The course started out as 16.471 probability and random processes and now includes elements of digital signal processing and digital signals.

- **Developed New Course 16.544/16.548**

  - This course which started as a special topics course provides students with an understanding to state of the art techniques used in the development of modern communication systems. Included are a discussion of Trellis Code Modulation (TCM) the use of Turbo Codes to approach the Shannon performance bound, soft decision detection of convolutional codes using the Viterbi Algorithm, and the implementation of modern communication systems using digital signal processing. Course is project based with bi-weekly projects in either Matlab or Simulink.

- **Redeveloped Course 25.108 Introduction To Engineering II**

  - The 25.108 Introduction to Engineering II for first year ECE students has been totally redone over the past couple of years to now include significant hands on activities

using the Parallax micro-controller system. We were able to purchase approximately 35 of the units at a total cost of about $80/system. The students write programs which control devices such as LED's, speakers, motors, and read inputs from switches. This gives experience with electronic components and continues to stress programming skills which are critical for students.

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- **Graduate Student Thesis Supervision**

  - Robert Scofidio-Ground Illumination Footprint of Meteor Scatter (MS-1988)
  - Steve Borque - Distributions of Meteor Amplitudes (MS-1989)
  - Paul Kreuger-60 GHz statellite to satellite propagation (MS-1989)
  - Tony Gould-Auroral Clutter Measurements (MS,1990)
  - Paul McCarthy -Coding for meteor communication (MS-6-1992)
  - Lee Witschen: Bistatic Radar Cross Section (MS-6-92)
  - Patrick Sheridan-Communication Network Fault Self Diagnosis (MS-6-1992)
  - William Ralston-CDMA for meteor Scatter (Doctoral 5-1993)
  - Siu (Eric) Li-Auroral Effects on meteor Scatter Comm (Doctoral 12-1993)
  - Donna Fagen - Advanced techniques for frequency planning in dual mode CDMA and AMPS cellular networks.
  - Mouaffac Ambris, 2003, Observations on performance of 1xEV-DO mobile devices with and without diversity D.Eng