Curriculum Vitae

EDMUND A SPENCER
Department of Electrical and Computer Engineering
University of South Alabama
150, Jaguar Dr., SH 4108, Mobile, Alabama 36688-0002
espencer@southalabama.edu Tel: 251-460 6258

EDUCATION

Ph. D. (2006)

Electrical & Computer Engineering, The University of Texas at Austin
The Institute For Fusion Studies & Department of Electrical and Computer Engineering
Research Specialization: Space Physics
PhD Dissertation: *Analysis of Geomagnetic Storms and Substorms with the WINDMI Model.*
Supervisors: Prof. Wendell Horton (Physics), Prof. Gary Hallock (ECE)

M.S. (2001)

Electrical & Computer Engineering, The University of Texas at Austin
Department of Electrical and Computer Engineering
Research Specialization: Electromagnetics and Acoustics.
MS Thesis: *Application of the Geometrical Theory of Diffraction to the Analysis of Microwave Signal Interaction with an Inhomogeneous Plasma Plume*
Supervisor: Prof. Gary Hallock

B.Eng. (1991)

Electrical and Electronics Engineering, University of Leicester (UK)

PROFESSIONAL EXPERIENCE

Associate Professor August 2016 – present.
University of South Alabama, Dept. of Electrical and Computer Engineering.

- Courses: Electromagnetics I and Feedback Control at the junior level. Stochastic Processes at the graduate level. Nanoelectronics at the graduate level. Electrical Circuits at Sophomore level.
- Research: Geomagnetic Storms and Substorms. Radio Frequency Plasma Impedance Probes for Space Plasmas. Computational Electromagnetics. Particle in Cell Codes.

Assistant Professor July 2013 – July 2016
University of South Alabama, Dept. of Electrical and Computer Engineering.

- Courses: Electromagnetics I and II at the junior level. Stochastic Processes at the graduate level. Nanoelectronics at the graduate level. Electrical Circuits at Sophomore level.
- Research: Geomagnetic Storms and Substorms. Radio Frequency Plasma Impedance Probes for Space Plasmas.

Assistant Professor August 2006 – June 2013
Utah State University, Dept. of Electrical and Computer Engineering.

- Courses: Electrical Circuits at Sophomore level. Engineering in the Space Environment at the graduate level. Intermediate Electromagnetics at the senior/graduate level. Space Physics and Electromagnetics at the graduate level.
- Research: Geomagnetic Storms and Substorms. Radio Frequency Plasma Impedance Probes.

Graduate Research/Teaching Assistant August 2003 - May 2006
The University of Texas at Austin, Dept. of Electrical and Computer Engineering, The Institute for Fusion Studies.

- Assigned, supervised and mentored Electrical Engineering students working on their senior design projects.
- Developed a computational model to analyze and predict geomagnetic storms and substorms in the Earth's magnetosphere.
- Supervised and mentored final-year Electrical Engineering projects by graduating seniors.

Staff Hardware Engineer-DAQ February 2001 – July 2003
National Instruments Corporation, Austin, Texas,

- Designed and developed electronic circuits, specifically the analog front end to A/D and D/A converters, filters, SMPS, for a 200kS/s 16-bit input, 16-bit output DAQ board based on the PCMCIA standard. Developed the product through release.
- Re-designed analog sections of previously shipped DAQ boards and released them.

Graduate Research/Teaching Assistant September 1998 – December 2000
The University of Texas at Austin, Dept. of Electrical and Computer Engineering

- Developed a model using asymptotic diffraction theory (UTD), for calculating the radiated electromagnetic fields from an antenna in the presence of an inhomogeneous plasma plume produced by satellite thrusters (Funded by the State of Texas Advanced Technology Project and Lockheed Martin Corporation).
- Assisted in teaching Introduction to Automatic Control and Circuit Theory. Graded homeworks and laboratory assignments.

Electrical Engineering Graduate Student 1995 - 1998
University of Malaya, Dept. of Electrical Engineering

- Developed a Method of Moments software program in C++ to evaluate the electromagnetic properties of a microwave stripline.

Lecturer of Electrical Engineering March 1995 – July 1998
Kolej Bandar Utama, INPENS College, PRIME College

- Instructed Automatic Control Systems at the Bachelor of Technology (Higher National Diploma, UK) level. Developed assignments and examinations.
- Instructed Electronic Circuit Design at the Bachelor of Technology (Higher National Diploma, UK) level. Developed assignments and examinations.
- Instructed Electrical Circuits and Electromagnetic Theory at the Bachelor of Technology (Higher National Diploma, UK) level. Developed assignments and examinations.

Electronics Design / Systems Design / Projects Engineer October 1992 - March 1995
O'Connors Engineering and Trading Ltd.

- Designed and developed analog circuits for battery chargers and hands free car kits used with cellular phones.
- Developed RF transmitter/receiver circuits for an automobile alarm system.
- Designed security and surveillance systems for condominiums and office buildings.
- Designed professional lighting systems for luxury hotels and recreational establishments.
- Implemented security and surveillance systems for condominiums and office buildings.

Telecontrol Engineer September 1991 – August 1992
National Electric Company of Malaysia (Tenaga Nasional)

- Implemented power system substation components in the development of a nationwide Supervisory Control and Data Acquisition system for the National Power Grid.

RESEARCH INTERESTS

- Space plasma physics and space weather.
- Design and development of cubesats for science missions in the magnetosphere and ionosphere.
- Design and development of next generation instruments for space science and space plasma characterization.
- Development of theoretical and analytical frameworks to analyze and interpret the measured data from instruments immersed in or proximate to a plasma.
- Interaction of the solar wind with the earth's magnetosphere.
- Nonlinear dynamics of growth, onset, expansion and recovery phases of geomagnetic substorms.
- Nonlinear dynamics of the initial, main and recovery phases of geomagnetic storms.
- Development of Full Electromagnetic 3D Particle in Cell codes for the analysis of RF instrument behavior in space plasmas.
- Analyzing and synthesizing models to explain satellite and ground based measurements of solar wind-magnetosphere-ionosphere activity.
- Genetic Algorithms, Particle Swarm Optimization, Differential Evolution and other stochastic optimization algorithms and applications.

PRODUCTS AND AWARDS

- Invented a new **Time Domain Impedance Probe** for measuring plasma density in the ionosphere. Built and integrated the instrument into a sounding rocket (2015).
- Recipient of **National Science Foundation Early Career Award**, (2013).
- National Electricity Company of Malaysia **TNB Scholarship** Award for Bachelor of Engineering degree (September 1989-July 1991).
- **Radio Frequency Transmitter and Receiver** for a Car Alarm System (1993).
- **Nickel Cadmium Battery Charger** for Nokia Cellular Telephones (1994).
- **Hands Free Car Kit** for Nokia Cellular telephones (1994).
- National Instruments DAQCard 6036E **PCMCIA Data Acquisition Board** (2002-2003).
- **EDN Product of the Month** Award for NI DAQCard 6036E (2003).
- National Instruments DAQCard 6024E **PCMCIA Data Acquisition Board** re-design

(2002-2003).
- **Outstanding Student Paper** Award, American Geophysical Union Fall Meeting (2005).

GRADUATE STUDENTS (Current)

- David Clark – MS – Cube-sat science mission design and data compression for plasma measurements.
- Sai Krishna Vadepu – MS- Analysis of non-linear impedance measurements in plasmas.

GRADUATE STUDENT THESIS AND DISSERTATIONS (Supervised as Major Professor)

- **Ali Shiri Sichani-MS 2015,** Modeling and Simulation of the AC Impedance of Plasma Sheaths.

- **Tushar Andriyas-PhD 2013**, Particle Dynamics And Resistivity Characteristics In Bifurcated Current Sheets, May 2013. **MS 2009**, Surface Wave Propagation in a Dielectric Waveguide Loaded with an Anisotropic, Conductive, and Spatially Dispersive Substrate. (Post Doctoral Researcher in Allahabad, India)

- **Swadesh Patra-PhD 2013**, The Contribution of Magnetospheric Currents to the Ground Magnetic Perturbations during Geomagnetic Storms, May 2013. **MS 2009**, Electron Density and Electron Neutral Collision Frequency in the Ionosphere Using Plasma Impedance Probe Measurements on Sounding Rockets. (Post Doctoral Researcher at University of Oslo, Norway)

- **Prajwal Kasturi-MS 2013**, Determination of The Auroral Electrojet Location Using Faraday Rotation on GPS Signals, May 2013. (Cisco, USA)

- **Ashish Raj-MS 2013**, Differential Evolution And Genetic Algorithms Applied To Optimization of Nonlinear Systems, May 2013. (Johnson Controls Inc., USA)

- **Arun Rao-MS 2010**, Analog Front-End Design using the Gm/Id Method for a Pulse-Based Plasma Impedance Probe System. (Pursuing PhD at Dartmouth College)

- **Xing Wei-MS 2009**, Optimization of Strongly Nonlinear Dynamical Systems Using a Modified Genetic Algorithm with Micro-Movement (MGAM). (American Express, USA)

- **Srinidhi Kaveri-MS 2008*,*** Design of Tunable Edge Coupled Microstrip Bandpass Filters. (Senior RF Engineer at Qualcomm, India)

RESEARCH GRANTS AND CONTRACTS

Awarded:

- **National Aeronautics and Space Administration**
  Spatially Resolved Measurements Of Plasma Density Irregularities In The Ionosphere F Region For Scintillation Studies (NASA USIP Cubesat)
  Principal Investigator: Edmund Spencer; Co-investigators: Samuel Russ, Carlos Montalvo, Saeed Latif.
  Period: 2016-2018
  Amount: $100,000.

- **National Science Foundation**
  CAREER: Theory, Techniques and Simulations of RF Impedance Probes For Plasma Characterization
  Role: Principal Investigator
  Period: 2013-2018
  Amount: $401,459.

- **National Science Foundation**
  NSWP: Space Weather Prediction with a Hybrid Physics/Black-Box Model
  Role: Principal Investigator
  Period: 2007-2009
  Amount: $159,146.

- **Utah State University Space Dynamics Laboratory**
  Miniaturization of the Plasma Impedance Probe System for Micro-satellite Applications
  Role: Principal Investigator
  Period: 2008-2009
  Amount: $77,913.

- **Utah State University**
  A Dynamical Magnetosphere Model
  Role: Principal Investigator
  Period: 2010
  Amount: $18,000.

- **Utah State University**
  Design and Optimization of Nonlinear Dynamical Models,
  Role: Principal Investigator
  Period: 2007-2008
  Amount: $14,270.

Pending:

- **National Science Foundation EPSCoR**
  CPU2AL (Connecting the Plasma Universe to Plasma Technology in AL: the Science and Technology of Low-Temperature Plasma)
  Period: 2017-2022
  Amount: $349,999.

PUBLICATION RECORD

Published Peer Reviewed Full Length Journal Articles

1. **E. Spencer**, S. Patra, Ionosphere Plasma Electron Parameters From Radio Frequency Sweeping Impedance Probe Measurements, *Radio Science,* 10.1002/2015RS005697, August 2015.
2. S. Patra, **E. Spencer**, The effect of changing solar wind conditions on the inner magnetosphere and ring current: A model data comparison, *JGR Space Physics,* 10.1002/2015JA021299, August 2015.
3. **T. Andriyas, E. Spencer,** Collisionless Resistivity in a Bifurcated Current Sheet, *JGR Space Physics*, doi: 10.1002/2013JA019242, June 2014.
4. **E. Spencer**, S. Patra, T. Asikainen, Magnetotail current contribution to the Dst Index Using the MT Index and the WINDMI model, *Advances in Space Research*, doi: 10.1016/j.asr.2013.08.016, December 2013.
5. **E. Spencer**, S. Patra, The effect of nonlinear ionospheric conductivity on magnetospheric substorms, *Nonlinear Processes in Geophysics*, doi:10.5194/npg-20-429-2013, June 2013.
6. S. Patra, **E. Spencer**, Plasma Impedance Probe: Simulations and Comparison to Sounding Rocket Mission Data, *IEEE Transactions Plasma Science*, doi:10.1109/TPS.2012.2225112, January 2013.
7. T. Andriyas, **E. Spencer**, A. Raj, L. Mays, J. Sojka, Forecasting the Dst index during corotating interaction region events using synthesized solar wind parameters, *JGR Space Physics*, doi:10.1029/2011JA017018, 2012.
8. **E. Spencer**, P. Kasturi, S. Patra, W. Horton, L. Mays, The Influence of Solar Wind-Magnetosphere Coupling Functions on the Dst Index, JGR Space Physics, doi:10.1029/2011JA016780, 2011.
9. S. Patra, **E.Spencer**, W. Horton, J. J. Sojka, Study of Dst/Ring Current Recovery Times during Geomagnetic Storm Events using the WINDMI Model, *JGR Space Physics*, doi:10.1029/2010JA015824, 2011.
10. X. Wei, **E. Spencer**, Optimization of a Magnetosphere Model for Real Time Space Weather Space Weather Prediction using a Modified Genetic Algorithm, *IEEE Trans. Plasma Science*, 10.1109/TPS.2010.2061867, 2010.
11. M.L. Mays, W. Horton, **E. Spencer**, J. Kozyra, Real-time predictions of geomagnetic storms and substorms: Use of the Solar Wind Magnetosphere-Ionosphere System model, *Space Weather* Vol 7, S07001, doi:10.1029/2008SW000459, 2009.
12. **E. Spencer**, A. Rao, W. Horton, M.L. Mays, Evaluation of solar wind-magnetosphere coupling functions during geomagnetic storms with the WINDMI model, *JGR Space Physics*, doi:10.1029/2008JA013530, 2009.
13. **E. Spencer**, S. Patra, T. Andriyas, C. Swenson, J. Ward, A. Barjatya, Absolute Electron

Density and Electron Neutral Collision Frequency in the Ionosphere from Plasma Impedance Probe Measurements, *JGR Space Physics*, Vol. 113, A09305 doi:10.1029/2007JA013004, 2008.

14. **E. Spencer**, W. Horton, I. Doxas and J. Kozyra, Analysis of the October 3-7 2000 and April 15-24 2002 Geomagnetic Storms with an Optimized Nonlinear Dynamical Model, *JGR Space Physics* Vol. 112, A04S90, doi:10.1029/2006JA012019, 2007.
15. M.L. Mays, W. Horton, J. Kozyra, C. Huang, T.H. Zurbuchen, **E. Spencer**, Effect of Interplanetary Shocks on the AL and Dst Indices, *Geophysical Research Letters*, doi:10.1029/2007GL029844, 2007.
16. W. Horton, J. Pratt, H.L. Berk, **E. Spencer**, Global Energy Confinement Scaling Prediction for Tandem Mirrors, *J. Fusion Energy*, doi:10.1007/s10894-006-9059-9, 2006.
17. **E. Spencer**, W. Horton and I. Doxas, The Dynamics of Storms and Substorms with the WINDMI Model, *J. Adv. in Space Research*, Vol. 38, Issue 8. 2006, pp 1657-1668.
18. W. Horton, **E. Spencer**, I. Doxas and J. Kozyra, Analysis of the October 3-7 2000 Geomagnetic storm with the WINDMI model, *Geophysical Research Letters*, Vol 32, L22102, doi:10.1029/2005GL023515, Nov 2005.
19. G.A. Hallock, J.C. Wiley, A. Khanna, **E.A. Spence**r, J.W. Meyer, J.T. Loane, Impact Analysis of Hall Thrusters on Satellite Antenna Performance, *J. Spacecraft and Rockets*, Vol 39, No. 1, pp 115-124, 2001.

Published Peer Reviewed Conference Articles

1. C. Coopmans, H. Malek, **E. Spencer**, Radiation and impedance characteristics of a circular loop antenna driven by fractional order electronics, IDETC/CIE 2013, Portland, Oregon, USA.
2. Jayaram, M. El-Hamoui, C. Winstead, **E. Spencer**, Electronic design and modeling of an integrated plasma impedance probe, IEEE Midwest Symposium on Circuits and Systems, doi:10.1109/MWSCAS.2009.5235969, 2009.
3. M. Jayaram, M. El-Hamoui, S. Patra, C. Winstead, **E. Spencer**, Fully Integrated System for a Plasma Impedance Probe, AIAA Small Satellite Conference, 2008.
4. W. Horton, J.-H. Kim, **E.Spencer**, C. Crabtree, Kinetic Instabilities in substorm dynamics, Int. Conf. Substorms-8:99-104, 2006.

Journal and Conference Articles Submitted

1. E. Spencer, S.K. Vadepu, A First Order Analytical Model for A Time Domain Impedance Probe In A Cold Magnetized Plasma, IEEE Antennas and Propagation Letters, October 2016.

Peer Reviewed Book Chapters

1. W. Horton, M.J. Mithaiwala, **E.A. Spencer**, and I. Doxas, WINDMI: A Family of Physics Network Models for Storms and Substorms, in Multiscale Coupling of Sun-Earth Processes, ed. by A.T.Y. Lui, Y. Kamide, and G. Consolini (Elsevier Publ. Co., Amsterdam, Netherlands, 2005), p. 431-446.

Oral Presentations At Scientific Conferences

1. **E. Spencer**, S. Patra, W. Horton, The Dynamics of Geomagnetic Storms and Substorms with the WINDMI model, presented at AGU Fall Meeting 2012.
2. **E. Spencer**, Magnetospheric Trigger Conditions During Isolated, Storm Time and Periodic Substorms, COSPAR Scientific Assembly, Mysore, India, July 2012.
3. **E. Spencer**, T. Andriyas, J. Sojka, M.L. Mays, Dst Prediction from CIR Events During 2008 Using Synthesized Signals Derived from SOHO and ACE Observations, AGU Fall Meeting 2011.
4. **E. A. Spencer**, S. Patra, W. Horton, Development of a Dynamical Magnetosphere Model by Coupling the WINDMI plasma physics model to an Analytical Magnetospheric Magnetic Field Configuration, (Invited), AGU Meeting of the Americas, Brazil 2010.
5. **E. Spencer**, P. Wheeler, S. Kaveri, T. Andriyas, B. Beardall, Acoustic Coupling between Drumset Cymbals, Acoustical Society of America Meeting, Salt Lake City, June 2007.

Paper and Poster Presentations at Scientific Conferences

1. **E. Spencer**, S. Russ, R. Gollapalli, B. Kerrigan, J. Mullins, K. Leggett, D. Clark, J. Mizell, D. Vassiliadis, G. Lusk, Measurements And Particle In Cell vs. Fluid Simulations Of A New Time Domain Impedance Probe For Ionospheric Plasma Characterization, Poster, AGU Fall Meeting 2015.
2. D. Vassiliadis, J. Christian, A. Keesee, **E. Spencer**, J. Gross, G. Lusk, Bringing Space Science to the Undergraduate Classroom: NASA's USIP Mission,Poster, AGU Fall Meeting 2015.
3. **E. Spencer,** Development of a Time Domain Radio Frequency Plasma Impedance Probe For Measurement of Absolute Electron Density and Electron Neutral Collision Frequency, Poster, AGU Fall Meeting 2014.
4. **E. Spencer**, S. Patra, Plasma Impedance Probe: Simulations and Comparison to Sounding Rocket Mission Data, AGU Fall Meeting 2013.
5. S. Patra, **E. Spencer**, Contribution of different magnetospheric currents to the Dst index for different solar wind-magnetosphere coupling functions, COSPAR Scientific Assembly, Mysore, India, July 2012.
6. T. Andriyas, **E. Spencer**, W. Horton, Interplay of Kelvin Helmholtz and Tearing Mode Instability during High Speed Stream (HSS) Events, AGU Meeting Fall 2011.
7. S. Patra, P. Kasturi, **E. Spencer**, W. Horton, L. Mays, The Influence of Solar Wind Magnetosphere Coupling Functions on The Estimation of The Dst Index, AGU meeting Fall 2011.
8. W. Horton, **E. Spencer**, Investigation of Magnetospheric Conditions During Periodic Substorm Events with a Nonlinear Dynamical Model, AGU Fall Meeting 2010.
9. **E. A. Spencer**, W. Horton, Investigation of Magnetospheric Conditions During Periodic Substorm Events with a Nonlinear Dynamical Model, APS DPP Meeting, Salt Lake City 2011.
10. S. Patra, **E. Spencer**, W. Horton, WINDMI-Magfield: A Dynamical Magnetic Field Model, AGU Fall Meeting 2010.
11. W. Horton, M.L. Mays, **E. A. Spencer**, Real-Time WINDMI Predictions of Geomagnetic Storms and Substorms, AGU Fall Meeting 2010.
12. S. Patra, **E. A. Spencer**, W. Horton, J. J. Sojka, M. L. Mays, Analysis of the 2007 year CIR events using the WINDMI Model: Energy Distribution and Ring Current Evolution,

AGU Fall Meeting 2009.

13. **E. A. Spencer**, S. Patra, M.L. Mays, W. Horton, Development of a Dynamical Magnetosphere Model by Coupling the WINDMI Plasma Physics Model to an Analytical Magnetospheric Magnetic Field Configuration AGU Fall Meeting 2009.
14. T. Andriyas, **E. A. Spencer**, Numerical simulation of surface waves in a stratified magnetoplasma using a Plasma Fluid Finite Difference Time Domain Simulation, AGU Fall Meeting, 2009.
15. W. Horton, M.L. Mays, **E. Spencer**, Dayside Magnetosphere-Ionosphere Solar Wind Driven Dynamics, AGU Fall Meeting, 2008.
16. T. Andriyas, S. Patra, **E. Spencer**, J. Ward, Aerodynamic Influence on Plasma Impedance Probe Measurements in Sounding Rocket Missions, AGU Fall Meeting, 2008.
17. **E. Spencer**, A. Rao, W. Horton, M.L. Mays, Prediction of AL and Dst indices from ACE Measurements using Hybrid Physics/Black-Box Techniques, AGU Fall Meeting, 2008.
18. S. Patra, A.J. Rao, M. Jayaram, M. Hamoui, **E. A. Spencer**, C. Winstead, A miniaturized Plasma Impedance Probe for ionospheric Absolute Electron Density and Electron Neutral Collision Frequency measurements, AGU Fall Meeting, 2008.
19. L. Mays, W. Horton, **E. Spencer**, J. Kozyra, Real Time WINDMI predictions of Geomagnetic Storms and Substorms, AGU Fall Meeting , 2008.
20. **E. Spencer**, S. Patra, T. Andriyas, C. Swenson, J. Ward, Plasma Impedance Probe Analysis with a Finite Difference Time Domain Simulation, Pulsed Power and Plasma Science Conference, July 2007.
21. **E. Spencer**, S. Kaveri, W. Horton, L. Mays, Evaluation of Solar-Wind Magnetosphere Coupling Functions Using the WINDMI Model, AGU Fall Meeting, 2007.
22. S. Patra, **E. Spencer**, T. Andriyas, C. Swenson, J. Ward, Determination of Absolute Plasma Electron Density and Electron Neutral Collision Frequency from Plasma Impedance Probe Measurements, AGU Fall Meeting., 2007.
23. W. Horton, M.L. Mays, **E. Spencer**, Physics modeling of storms and substorms with solar wind data, Proceedings of the 8th International Conference on Substorms, 2006.
24. **E. Spencer**, S. Kaveri, W. Horton, L. Mays, Space Weather Prediction Using a Hybrid Physics/Black-box Model, AGU Fall Meeting ,2006.
25. S. Sridharan, **E. Spencer**, J. Ward, C. Swenson, Impedance Probe Analysis of Ionospheric Plasma Properties Using a Finite Difference Time Domain Model, AGU Fall Meeting, 2006.
26. W. Horton, L. Mays, **E. Spencer**, J. Kozyra, C. Huang, Effect of Interplanetary Shocks on AL and Dst Indices, AGU fall Meeting , 2006.
27. L. Mays, W. Horton, **E. Spencer**, R. Weigel, D. Vassiliadis, J. Kozyra, AL and Dst Predictions with the Real-Time WINDMI Model, AGU Fall Meeting, 2006.
28. **E. Spencer**, W. Horton, L. Mays, I. Doxas, J. Kozyra, Analysis of Geomagnetic Storms and Substorms with the WINDMI Model, AGU Spring Assembly, 2006.
29. W. Horton, **E. Spencer**, I. Doxas, J. Kozyra, Analysis of the October 3-7 2000 GEM Storm with the WINDMI Model, Part I, AGU Fall Meeting, 2005.
30. L. Mays, J. Pratt, **E. Spencer**, W. Horton, I. Doxas, Effect of Magnetic Clouds and IP Shocks on AL and Dst Indices, AGU Fall Meeting, 2005.
31. **E. Spencer**, W. Horton, I. Doxas, J. Kozyra, Analysis of the October 3-7 2000 and April 15-24 2002 Geomagnetic Storms with the WINDMI model, Part II, AGU Fall Meeting , 2005.
32. G.A. Hallock, J.C. Wiley, **E.A. Spencer**, J.W. Meyer, J.T. Loane, Development and Application of the Beamserver Code for Plume Impact Analysis on Satellite

Communication, AIAA 2001-3354. Proceedings of the 37th AIAA/ASME/SAE/ASEE Joint Propulsion Conference, 07/01/01

33. G.A. Hallock, J.C. Wiley, A. Khanna, **E.A. Spencer**, J.W. Meyer, J.T. Loane, Impact Analysis of Hall Thrusters on Satellite Communication, AIAA 2000-3519. Proceedings of the 36th AIAA/ASME/SAE/ASEE Joint Propulsion Conference, 07/01/00.

COURSES TAUGHT AT USA

Semester	Course Number and Title	Credit Hours	Enrollment
Fall 2013	EE354 Electromagnetics I	3	22
Fall 2013	EE575 Stochastic Processes	3	21
Spring 2014	EE354 Electromagnetics I	3	8
Spring 2014	EE355 Electromagnetics II	3	18
Fall 2014	EE354 Electromagnetics I	3	23
Fall 2014	EE575 Stochastic Processes	3	40
Spring 2015	EE575 Stochastic Processes	3	58
Spring 2015	EE590 Sp. Topic: Nanoelectronics	3	19
Summer 2015	EE 494 Electromagnetics II	2	6
Summer 2015	EE 599 Thesis	3	1
Fall 2015	EE575 Stochastic Processes	3	38
Fall 2015	EE220 Circuit Analysis 1	3	33
Fall 2015	EE599 Thesis	2	2
Spring 2016	EE328 Feedback Control	3	28
Spring 2016	EE590 Sp. Topic: Nanoelectronics	3	26
Fall 2015	EE220 Circuit Analysis I	3	80
Fall 2016	EE575 Stochastic Processes	3	13

DEPARTMENT/UNIVERSITY SERVICE

Fall 2013	IEEE Student Branch Advisor Faculty Search Committees Graduate Affairs Committee
Spring 2014	IEEE Student Branch Advisor Graduate Affairs Committee Faculty Search Committee
Fall 2014	IEEE Student Branch Advisor Graduate Affairs Committee Faculty Search Committee

Spring 2015	IEEE Student Branch Advisor Graduate Affairs Committee Faculty Search Committee Publicity and Outreach Committee Electromagnetics Laboratory Coordinator
Fall 2015	IEEE Student Branch Advisor Eta Kappa Nu Branch Advisor
Spring 2016	IEEE Student Branch Advisor Eta Kappa Nu Branch Advisor Graduate Affairs Committee Member
Fall 2016	IEEE Student Branch Advisor Eta Kappa Nu Branch Advisor Graduate Affairs Committee Member College Faculty Affairs Committee Member

PROFESSIONAL SERVICE

- Panel Reviewer for NASA Heliophysics Guest Investigator program.
- Reviewer for IEEE Transactions on Plasma Science.
- Reviewer for 18th International Conference on Computer and Information Technology.
- AdHoc Reviewer for NASA HTIDs program.
- Reviewer for JGR Space Physics.
- Panel Reviewer for NSF GEM program.
- Panel Reviewer for NASA Geospace SR&T program.
- Reviewer for Journal of Atmospheric and Solar-Terrestrial Physics.
- Reviewer for Journal of Earth, Planets and Space.
- Panel Reviewer on NSF NSWP program.
- Mail In Reviewer for NSF Magnetospheric Program.
- Participator on NASA Geospace Program Panel.

PROFESSIONAL MEMBERSHIPS

- American Geophysical Union (AGU) Member.
- Institute of Electrical and Electronics Engineers (IEEE) Member.
- Committee Of Space Researchers (COSPAR) Associate.
- European Geophysical Union Member.