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## EDUCATION

- 1961 Princeton University: Ph.D. - Dissertation: "*The Behavior of Electrons in Certain Gas Mixtures.*"
- 1959 Princeton University: M.A.
- 1957 Princeton University: B.S.E.; Phi Beta Kappa, Sigma Xi
- 1953 H.B. Plant High School; Tampa, Florida; Valedictorian

## AREAS OF INTEREST

Lightning Physics, Lightning Protection, Electromagnetic Field Theory

## EMPLOYMENT

- 2003-present Distinguished Professor, Department of Electrical and Computer Engineering, University of Florida, Gainesville, FL 32611
- 1991-2003 Professor and Chairman, Department of Electrical and Computer Engineering, University of Florida, Gainesville, FL 32611
- 1975-1995 President, 1975-1983; Vice President and Chief Consulting Scientist, 1983-1995, Lightning Location and Protection, Inc., Tucson, AZ
- 1971-2003 Professor, Department of Electrical and Computer Engineering, University of Florida, Gainesville, FL
- 1965-1971 Fellow Physicist, Westinghouse Research Labs, Pittsburgh, PA
- 1961-1965 Associate Professor of Electrical Engineering, University of Arizona, Tucson, AZ
- Summer, 1958 Scientist, Elcon Laboratory, Inc., Cambridge, MA
- Summer, 1958 Research Assistant, Forrestal Research Center, Princeton, NJ
- Summer, 1957 Research Associate, Sperry Gyroscope Company, Great Neck, NY
- Summer, 1956 Research Assistant, Sandia Corporation; Albuquerque, NM

## PROFESSIONAL ORGANIZATIONS

### Memberships

- American Meteorological Society (AMS) - Fellow, 1985
- Institute of Electrical and Electronics Engineers (IEEE) - Fellow, 1988; Life Fellow, 2004
- American Geophysical Union (AGU) - Fellow, 1989

## Committee Memberships

IEEE Heinrich Hertz Medal Committee, 1999 -2000; American Geophysical Union, Fellow/Awards Committee, Atmospheric Sciences Section, 1993-1999, Chairman 1996-1997, 1997-1998, 1998-1999; American Geophysical Union, Macelwane Medal Committee, 1997; American Geophysical Union, Atmospheric Sciences Section Executive Committee, 1995-1999; International Conference on Lightning Protection: Executive Committee, U.S. representative -20<sup>th</sup> ICLP, Interlaken, Switzerland, 1990; 21<sup>st</sup> ICLP, Berlin, 1992; 22<sup>nd</sup> ICLP, Budapest, 1994; 23<sup>rd</sup> ICLP, Florence, Italy, 1996; 24<sup>th</sup> ICLP, Birmingham, England; CIGRE Working Group 33.11, Task Force on Lightning, 1990-present; IEEE Working Group on Lightning Performance of Distribution Lines, 1979-present; IEEE Working Group on Estimating of Performance of Transmission Lines, 1985-present; International Commission on Atmospheric Electricity (ICAE), 1975-1992; ICAE Subcommittee 6 on Lightning and Spherics, Ad-hoc Working Groups on Comparative Lightning Measurements and on International Thunderstorm Project, 1968-1974; Chairman of Subcommittee 6, 1988-1992; American Geophysical Union Committee on Atmospheric and Space Electricity, 1990-1995; American Meteorological Society Committee on Atmospheric Electricity (Chairman, 1974 and 1975)

## Other Professional Activities

Board of ORTGE Publications, University of Florida Office of Research, Technology, and Graduate Education, 1995  
Board of Directors, University of Florida Division of Sponsored Research, 1989-90 to 1991-92 (University-wide election)  
University Senate, 1988-89 to 1990-91, 1993-94 to 1997-98  
Associate Editor, Journal of Geophysical Research, 1980-1983

## HONORS

- 2018 Lifetime Achievement Award "For your outstanding leadership and significant contributions to the lightning community. Your dedication, extensive scientific research, and educational instruction have inspired students and colleagues to achieve a better understanding of lightning electromagnetics, as well as lightning detection and protection around the world."  
Presented at the 25th International Lightning Detection Conference and the 7<sup>th</sup> International Lightning Meteorology Conference, 12-15 March, 2018, Ft. Lauderdale, FL USA
- 2017 University of Florida Term Professorship Award January 2017 "for excellence in teaching, research, and service."
- 2010 International Conference on Lightning Protection Karl Berger Award "for distinguished achievements in the science and engineering of lightning research, developing new fields in theory and practice, modeling and measurements."
- 2001 American Geophysical Union John Adam Fleming Medal for original research and technical leadership in geomagnetism, atmospheric, electricity, space science, aeronomy, and related sciences: for outstanding contribution to the description and understanding of electricity and magnetism of the earth and its atmosphere.
- 2001 IEEE Power Engineering Society Surge Protective Devices Committee Prize Paper Award for "EMTP Modeling of a Triggered-Lightning Strike to the Phase Conductor of an Overhead Distribution Line," by C. T. Mata, M.I. Fernandez, V.A. Rakov, and M.A. Uman.
- 1999 IEEE Power Engineering Society Working Group Award for Standard or Guide -"Estimating Lightning Performance of Transmission Lines, IEEE Std. 1243."
- 1999 American Society for Engineering Education (ASEE) Southeastern Section - Runner Up for Best Paper Award, for "Triggered-Lightning Experiments at Camp Blanding, Florida (1993-1995)," by M.A. Uman, V.A. Rakov, K.J. Rambo, T.W. Vaught, M.I. Fernandez, D.J. Cordier, R.M. Chandler, R. Bernstein, and C. Golden.
- 1998 University of Florida, Professorial Excellence Program Award.
- 1996 IEEE Heinrich Hertz Medal (gold medal and \$10,000) for outstanding contributions to the understanding of lightning electromagnetics and its application to lightning detection and protection.
- 1996 NASA Group Achievement Award to the Lightning and Radio Emission Detector/Energetic

- Particle Detector Team/Galileo Probe including M.A. Uman, University of Florida (certificate).
- 1994 IEEE Industry Applications Society, Industrial and Power Systems Department, 1994 Ralph H. Lee Prize Paper Award for "Natural Lightning," IEEE Transactions on Industry Applications, 30, 785-790, M.A. Uman.
- 1992 NASA Group Achievement Award to the Galileo Probe Spacecraft Team, including M.A. Uman, University of Florida (certificate).
- 1990-91 Florida Academy of Sciences Outstanding Florida Scientist (gold medal).
- 1989 Editors' Citation for Excellence in Refereeing, Journal of Geophysical Research, Atmospheres
- 1988-89 University of Florida Teacher-Scholar of the Year (highest faculty award) (gold medal and cash award).
- Fellow, American Geophysical Union.
- Fellow, American Meteorological Society.
- Fellow, Institute of Electrical and Electronics Engineers (IEEE).
- 1988 Faculty Advisor for Outstanding EE Department Master's Thesis (Georgiadis).  
Listed in Who's Who in America (Marquis).
- 1986 Faculty Advisor for Outstanding EE Department Master's Thesis (Rubinstein).
- 1985-86 Outstanding Teacher of an Electrical Eng. Undergraduate Core Course.
- 1982 IEEE Electromagnetic Compatibility Society Transactions Prize Paper Award.
- 1979-80 University of Florida Blue Key Distinguished Faculty Award.
- 1975 College of Engineering, University of Florida, Outstanding Service Award.

## PATENTS

7. Lightning Detector Using an X-Ray Detector and an E-or B-Field Detector, U. S. Patent Application No. 7,809,507, October 5, 2010, with J. Dwyer, M. A. Uman, H. K. Rassoul, J. E. Jerauld, D. M. Jordan, K. J. Rambo, and V. A. Rakov
6. Lightning Detector and Related Systems, U.S. Provisional Patent Application No. US60/635,100, December 10, 2004, with J. Dwyer, J. Jerauld, D. Jordan, V. Rakov, K. Rambo, and M. Rassoul.
5. Gated Lightning Detection System, Canadian Patent No. 1,126,819, June 29, 1982, with E.P. Krider, R.C. Noggle.
4. Lightning Activated Relay, U.S. Patent No. 4,276,576, June 30, 1981, with R.B. Standler.
3. Lightning Detection System Utilizing Triangulation and Field Amplitude Comparison Techniques, U.S. Patent No. 4,245,190, January 13, 1981, with E.P. Krider, R.C. Noggle.
2. A Detection System for Lightning, U.S. Patent No. 4,115,732, September 19, 1978 with E.P. Krider, R.C. Noggle.
1. High-Voltage Direct Current Circuit Interrupter, United States Patent Office, No. 3,544,843, December 1, 1970, with A.M. Sletten, R.E. Orville, and A. J. Venturino.

## RESEARCH GRANTS AND CONTRACTS - approximately \$28 million

67. Kirshenbaum Bond Senecal & Partners LLC as Agent for BMW of North America, LLC, UF Agreement AGR00009220, 8/27/2017-10/31/2017, \$135,000, P.I.
66. Scientific Lightning Solutions, LLC, Lightning Testing SLS, 2/15/16 – 2/1/19, \$550,000, PI
65. US Dept. Defense/DARPA STOIC – Lightning/Ionospheric Interactions 3/15 – 3/18, \$2.7M (responsible part as Co-PI)
64. NASA, 6/6/2012 - 4/30/2013, Triggered Lightning Study IAW Weather Instrumentation Subsystem, \$73,555, P.I.
63. US Dept. Defense/DARPA-NIMBUS, 06/01/10 - 03/30/15, Lightning Initiation, Propagation, Attachment and Ionospheric Effects, \$11,100,000, P.I.
62. US Dept. Defense/DARPA, 06/05/09 – 01/04/10, Lightning and Propagation, \$249,500, P.I.
61. US Dept. Defense/DARPA, 03/25/08 – 08/22/09, The Role of X-rays, Gamma Rays, and Cosmic Rays in Lightning Initiation and Propagation, \$970,681 P.I.
60. University of Central Florida, 7/10/08 – 7/10/09, Task Order Agreement # 5, Shuttle Lightning Instrumentation, Triggered Lightning Experiments \$40,000
59. NASA, Lightning Research and Testing at Camp Blanding, 06/27/09 – 06/26/10, \$40,000 P.I.

58. Department of Transportation, Federal Aviation Administration, A Characterization of the Close Electric and Magnetic Fields and Thunder of Lightning from the UF Multiple Station Experiment, 06/24/99 – 06/24/10, \$790,058 P.I.
57. Air Force Research Laboratory, Proposal for the Potential Generation and Study of Ball Lightning Using Triggered-Lightning to Earth Soils, 08/27/07 – 05/29/09, \$157,838, P.I.
56. Florida Institute of Technology, Runaway Discharges and Their Roles in Atmospheric Processes, 01/01/07 – 12/31/09, \$45,000, P.I.
55. Lawrence Livermore Laboratory, Update Direct-Strike Lightning Environment for Stockpile-to-Target Sequence Supplement LLNL – Contract #B568621, 09/26/07 – 09/01/10, \$100,000 P.I.
54. Florida Space Grant Consortium, 08/01/05-08/01/06, \$20,000. P.I.
53. Florida Institute of Technology subcontract from NSF, TERA: Thunderstorm Energetic Radiation Array, 08/01/04 – 07/31/09, \$187,473, P.I.
52. Engineering Analysis of Airfield Lighting System Lightning Protection, Van Wagenen and Beavers (subcontract with the US Navy), 02/15/05 – 11/15/05, \$38,000. Co-P.I.
51. Florida Space Grant Consortium, 08/16/04 – 08/15/05, \$20,000. P.I.
50. Los Alamos National Laboratory/Department of Energy, Rocket Triggered Lightning Experiment University of Florida, 05/01/04 – 5/31/05, \$30,000. Co-P.I.
49. Lawrence Livermore Laboratory, Rocket-Triggered and Natural Lightning Experiments to Confirm Accuracy of Peak Current Measurement Methodology and to Elucidate Potential Mechanism Causing Indirect High Current Flows Induced by Nearby Lightning, 06/07/04 – 10/31/04, \$23,172; 06/07/05 – 06/07/06, \$50,000. P.I.
48. NSF, Further Studies of the Phenomenology and Physics of the Lightning Discharge, 05/15/04 – 04/30/09, \$1,125,000. Co-P.I.
47. Lightning Safety Alliance Corp., Lightning Protection for Residential Structures, 05/31/04 – 05/31/06, \$80,000. Co-P.I.
46. NSF, Study of Various Properties of Natural and Triggered Lightning Discharges, Continued 2/01/01-1/31/04, \$568,647. Co-P.I.
45. Florida Power and Light, Florida Power and Light R&D Project at Camp Blanding, 5/11/99 - 2/28/05, \$1,288,733. P.I.
44. Florida Gas Transmission, Triggered Lightning Testing of a Section of Florida Gas Transmission Pipeline and Pipeline Connectors, 7/01/01 - 11/30/01, \$20,000. P.I.
43. Department of Community Affairs, Protection of Residential Buildings, 2/12/99- 6/11/01, \$50,000. P.I.
42. NSF, Study of Various Properties of Natural and Triggered Lightning Discharges, 1995-2001, \$554,870. P.I.
41. Sandia, Triggered Lightning Test KOMO42296 Continued, 5/21/97-2/15/01, \$325,000. P.I.
40. Florida Dept of Transportation, Basic Research on the Damage Mechanisms to an Airport Lighting System Due to Lightning, 1996-1999, \$110,000. P.I.
39. Georgia Power Co., Testing of MOV Arresters, 9/25/97 - 12/25/98, \$12,000. P.I.
38. EPRI, Testing of Distribution Arresters Using Triggered Lightning at Camp Blanding, 97-98, \$140,000.
37. EPRI, Rocket Triggered Lightning Research for Duquesne Light Company, 1995-1998, \$51,200.
36. EPRI, Continued Triggered-Lightning Experiments on the 1996-97 Test Power Distribution System at Camp Blanding, 1996, \$168,000.
35. Sandia, 1997 Triggered Lightning Test KOMO42296, 1996-1997, \$86,745.
34. EPRI, Performance of Storm Test No. 7, 1995-1996, \$20,000.
33. NASA, Continued Testing of the Galileo Lightning and Radio Emission Detector, 8/1/90 - 3/31/00, \$285,716.
32. Florida Space Grant Consortium, Relationship Between Lightning and Rainfall, 1994-1995, \$5,000.
31. Florida Space Grant Consortium, Testing of the Galileo Lightning and Radio Emission Detector on Earth Lightning, 1994-1995, \$5,000.
30. NSF, Lightning Return Stroke Modeling from Very-Close Field Measurements and the Modeling of Lightning-Induced Voltages on Horizontal Wires, U. S. - Switzerland Cooperative Program, 1992-1994, \$13,500.
29. Florida Space Grant Consortium, Testing of the Galileo Lightning and Radio Emission Detector, 1992-1993, \$4,000.

28. NSF, Measurement of the Horizontal Component of the Electric Field from Very Close Lightning, 6/1/91-8/31/91, \$29,800
27. NSF, Determination of Lightning Properties from Single Station Wideband Electrical Field Measurements, 1991-1993, \$317,970.
26. NSF, Lightning Models and Lightning-Induced Voltages on Power Lines, US-Italy Cooperative Program, 1990-1992, \$17,552.
25. Florida Space Grant Consortium, Lightning Properties Determined from Single Station Wideband Electric Field Measurements, 1991-1992, \$7,020.
24. NASA, Off-Campus Research at NASA-KSC, 8/3/89-4/1/90, \$5,000.
23. NSF, Lightning Effects on Power Distribution Lines - US-Mexico Cooperative Program, 1989-1991, \$17,841
22. NSF, Lightning Properties Determined from Single-Station Wideband Electric Field Measurements, 1989-1991, \$149,054.
21. Defense Nuclear Agency, Comparison of the Frequency Spectra of HEMP and Lightning, 1987-1988, \$114,066.
20. NASA Headquarters, A VHF Source Location System, 1987-1988, \$60,000.
19. NASA, 1986 Rocket Triggered Lightning Program, 1986-1987, \$9,950.
18. NASA, Lightning at the Kennedy Space Center, 1985-1986, \$18,500.
17. Oak Ridge National Laboratory, (Martin Marietta) Voltages Induced by Lightning on Electric Power Distribution Lines, 1984-1992, \$438,257.
16. NSF, Capital Equipment for Lightning Research, 1984-1985, \$88,230.
15. NASA, Studies of Lightning at Launch Complex 39, KSC, FL, 1984-1986, \$55,500.
14. NSF, Lightning Physics, 1983-1987, \$584,300.
13. NSF, Measurement of Characteristics of Lightning Currents and Electric and Magnetic Fields; and Applications to Lightning Protection, 1981-1987, \$15,815.
12. DOE, Lightning Protection of Distribution System, 1981-1985, \$308,612.
11. U.S. Navy, Lightning Physics: A Three-Year Program, 1981-1983, \$59,000.
10. NSF, Lightning Return Stroke Properties from Electric and Magnetic Field Measurements, 1980-1982 (3 year grant), \$350,000.
9. NASA, Experiment Implementation of a Lightning and Radio Emission Detector, 1978-1990, \$135,513.
8. DOE, Lightning Effects on Distribution Power Lines, 1978-1980 (2 year grant), \$245,000.
7. NASA, Lightning and I-Hz to 100-kHz Radio Wave Measurements in the Jovian Atmosphere on the Probe of the Jupiter Orbiter-Probe 1981-1982 Mission, 1977-1987, \$112,000; 1987-1990, \$51,000.
6. NSF, Lightning Properties from Electric and Magnetic Field Measurements, 1976-1978 (3 year grant), \$215,000.
5. NSF, Electric and Magnetic Field and Associated Currents in Lightning Return Strokes, 1973-1975 (3 year grant), \$150,000.
4. NSF, Analysis of Lightning Electric Fields, 1972, \$40,000.
3. ONR, Physics of Lightning, 1964-1983, \$25,000-\$30,000 per year.
2. NASA, KSC, Lightning Studies, 1970, 1973-1981, NASA MSFC 1971, \$10,000-\$20,000 per year.
1. Air Force OSR, Ball Lightning, 1968, \$50,000.

## **CONSULTING**

Consulting relative to lightning properties and protection, partial list: numerous attorneys, North American Rockwell, Patrick Air Force Base, RCA, Mobil Oil Corporation, United Technologies, Honeywell, Flamex Corporation, Tampa International Airport, IBM, Tidewater Construction Corporation, NOAA, Wallups Station, Virginia, NASA Langley, Vail Associates, Boeing Aircraft, McDonnell Douglas Corporation, Wright Patterson AFB, International Minerals and Chemical Corporation, Monsanto, Federal Express, Northern Telecom Canada, Lockheed Aircraft Corporation, Stanford Research International, Tampa Cable Television, The Gillen Partnership, Walt Disney World, U.S. Army Missile Command, Electromagnetic Applications, RDA, Aerospace Corporation, NASA Johnson Space Center, Bonneville Power Administration, Martin Marietta, Sandia National Laboratories, Alcoa, Elemko (Greece), Pacific Gas and Electric, Westinghouse Hanford Company, Electric Research and Management, Florida Gas Transmission Company, Vaisala, Inc., Shell Exploration and Production Company, Dallas-Fort Worth

Airport (Freese and Nichols), Conservation Energy, LLC., SeaWorld Parks and Entertainment, Phoenix Contact, Freehills (Australia), Barrick Gold

## PUBLICATIONS

### Books

7. **The Art and Science of Lightning Protection**, Cambridge University Press, 240 p., 2008, M. A. Uman, (cited 104 times), paperback 2010.
6. **Lightning: Physics and Effects**, Cambridge University Press, 687 p., 2003, V.A. Rakov and M. A. Uman (cited 2011 times), paperback 2006. Chinese translation (2016).
5. **The Lightning Discharge**, Academic Press, London (1987), 376 pages; revised paperback edition, Dover, New York (2001) (cited 1253 times)
4. **All About Lightning**, Dover, New York, (1986). (Revised paperback version of Understanding Lightning). Dutch translation: **Alles Over Onweer** (2007). Publisher: Van der Heide, Kollum, Nederlandse (cited 144 times)
3. **Understanding Lightning**, BEK Technical Publications, Carnegie, PA (1971), 166 pp. (cited 49 times)
2. **Lightning**, McGraw-Hill Book Company, New York (1969), 264 pages. Russian translation (1972), revised edition, Dover, New York (1984). (cited 646 times)
1. **Introduction to Plasma Physics**, McGraw-Hill Book Co., New York (1964), 226 pages. (Cited 73 times)

### Book Chapters and Encyclopedia Articles

19. "Lightning" in 2014 McGraw-Hill Education Yearbook of Science and Technology, McGraw-Hill Book Co., New York, E. Phillip Krider, M. A. Uman, and R. E. Orville, and online <http://www.accessscience.com/content/lightning/382000>
18. "High energetic radiation from thunderstorms and lightning," Lightning Electromagnetics, Ed. Vernon Cooray, Chapter 23, Institute of Engineering and Technology, 2012, J. R. Dwyer, H. K. Rassoul, M. A. Uman
17. "*Lightning, Lightning Protection and Test Standards*," Wiley Encyclopedia of Electrical and Electronic Engineering – Online and in Print, John Wiley, 2007, E. P. Krider and M. A. Uman
16. "TEM Field Structure of Electric and Magnetic Fields from a Semi-Infinite Vertical Thin-Wire Antenna Above a Conducting Plane," Ultra-Wideband, Short-Pulse Electromagnetics 7, Chapter 4, pp. 33-40, Plenum US Publishing, New York, 2007, R. Thottappillil and M. A. Uman.
15. "*Lightning*," The Electrical Engineering Handbook, 2006, 3<sup>rd</sup> Edition, Chapter 19, pp. 27-42, CRC Press, Boca Raton, FL.
14. "Testing of Russian image-converter cameras K004M and K0008 in recording triggered (artificially initiated) and natural lightning in Florida", in "Photoelectronic Measurements", Universitetskaya Kniga, Moscow, Russia, 2005, pp. 479-510, V.B. Lebedev, G.G. Feldman, B.N. Gorin, V.A. Rakov, M.A. Uman, and R.C. Olsen
13. "*Lightning*," Encyclopedia of Physics, 3<sup>rd</sup> Edition, R. G. Lerner and G. L. Trigg, Editors, Wiley-VCH Publishers, New York, 2005, pp. 1321-1325
12. "*Lightning*," in The World Book Encyclopedia, World Book Publishing, Chicago, IL, pp. 263-265, 1984 through 1992 edition; pp. 299-301, 1993 edition; 2002 edition; 2003 edition in press.
11. "Lightning," World Book Online Americas Edition, March 8, 2002, M. A. Uman, <http://www.worldbookonline.com/wbol/wbPage/na/ar/co/323540>.
10. "*Lightning, Lightning Protection and Test Standards*," Wiley Encyclopedia of Electrical and Electronic Engineering - Online and in Print, John Wiley, December 1999, E.P. Krider and M.A. Uman.

9. "Lightning," in CRC Handbook of Chemistry and Physics, CRC Press, Boca Raton, FL, 1993, pp. 14.27-14.30.
8. "Lightning," Chapter 38.3, pp. 935-948, in Electrical Engineering Handbook, CRC Press, Boca Raton, FL, 1993, M. A. Uman and M. Rubinstein; 2nd Edition, 1997.
7. "Lightning," Encyclopedia of Physics, 2nd Edition, R. G. Lerner and G. L. Trigg, Editors, VCH Publishers, New York, 1991, pp. 637-639.
6. "Lightning and Surge Protection," in 1991 McGraw-Hill Yearbook of Science and Technology, McGraw-Hill Book. Co., New York, pp. 222-223.
5. "Physics of Lightning," Chapter 2 in Lightning Injuries: Electrical, Medical, and Legal Aspects, CRC Press (ISBN-0-8493-5458-7) Boca Raton, FL, 1991. Andrews, Cooper, Darveniza, and Mackerras (eds.).
4. "Application of Lightning Detection Technology to Electric Power Utilities," in Power Technology International, 1990, Ed: Richard Knox, Stirling Publishing Group PLC, 86-88 Edgeware Road, London W2 2YW, 1990, by R. R. Rissland and M. A. Uman.
3. "Scientific Study of Lightning," in Book of Days 1987, Perian Press, Ann Arbor, MI, 1986, pp. 282-283.
2. "Application of Advances in Lightning Research to Lightning Protection," in The Earth's Electrical Environment, National Academy Press, Washington, D.C., 1986, pp. 61-69.
1. "Lightning," in Encyclopedia of Physics, Addison-Wesley Publishing Company, Reading, MA, 1980, pp. 520-521.

## Articles in Reviewed Journals

### 2021

267. Is a Propagating Infinite Plane Wave a "Radiation Field?", International Journal of Magnetism and Electromagnetism, IJME-6-033, ijme\_AS62146812, doi:10.35840/2631-5068. April 2021, W. Clint Snider, Martin A. Uman, and Robert C. Moore

### 2020

266. Fine progression features of return stroke luminosity at the bottom of rocket-triggered lightning channels, Journal of Atmospheric Electricity, Vol. 39, No. 2, 2020, pp.57-69, doi:10.1541/jae.39.57, H. Huang, D. Wang, M. Uman, T. Wu, and N. Takagi

### 2018

265. High-speed video and lightning mapping array observations of in-cloud lightning leaders and an M-component to ground, J. Geophysical Research – Atmospheres, doi:10.1002/2018JD029506, October 22, 2018, D. A. Kotovsky, M. A. Uman, R. A. Wilkes, and D. M. Jordan
264. Triggered lightning return stroke luminosity up to 1 km in two optical bands, J. Geophysical Research - Atmospheres, doi:10.1002/2018JD028644, September 14, 2018, F. L. Carvalho, M. A. Uman, D. M. Jordan, R. A. Wilkes, and D. A. Kotovsky
263. Lightning Evolution in Two North-Central Florida Summer Multi-Cell Storms and Three Winter/Spring Frontal Storms, J. Geophysical Research – Atmospheres, doi:10.1002/2017JD026536, Jan. 28, 2018, J. A. Caicedo, M. A. Uman, and J. T. Pilkey

### 2017

262. Evaluation of ENTLN performance characteristics based on the ground truth natural and rocket-triggered lightning data acquired in Florida, J. Geophysical Research, doi:10.1002/2017JD027270, September 19, 2017, Y. Zhu, V. A. Rakov, M. D. Tran, M. G. Stock, S. Heckman, C. Liu, C. D. Sloop, D. M. Jordan, M. A. Uman, J. A. Caicedo, D. A. Kotovsky, R. A. Wilkes, F. L. Carvalho, T. Ngin, W. R. Gamerota, J. T. Pilkey and B. M. Hare
261. Do Cosmic Ray Air Showers Initiate Lightning?: A Statistical Analysis of Cosmic Ray Air Showers

and Lightning Mapping Array, *J. Geophysical Research- Atmospheres*, doi:10.1002/2016JD025949, August 10, 2017, B. M. Hare, J. R. Dwyer, L. H. Winner, M. A. Uman, D. M. Jordan, D. A. Kotovsky, J. A. Caicedo, R. A. Wilkes, F. L. Carvalho, J. T. Pilkey, T. K. Ngim, W. R. Gameraota, and H. K. Rassoul

260. Flash Propagation and Inferred Charge Structure Relative to Radar-Observed Ice Alignment Signatures in a Small Florida Mesoscale Convective System, *Geophysical Research Letters*, doi:10.1002/2017GL074610, July 31, 2017, Michael I. Biggerstaff, Zachery Zounes, A. Addison Alford, Gordon D. Carrie, John T. Pilkey, Martin A. Uman and Douglas M. Jordan
259. Triggered Lightning Sky Waves, Return Stroke Modeling, and Ionospheric Effective Height, *J. Geophysical Research – Atmospheres*, doi:10.1002/2016JD026202, March 24, 2017, F. L. Carvalho, M. A. Uman, D. M. Jordan, J. Hill, S. Cummer, D. A. Kotovsky, and R. Moore
258. Frequency domain analysis of triggered lightning return stroke optical velocity, *J. Geophysical Research - Atmospheres*, doi:10.1002/2016JD025863, February 16, 2017, F. L. Carvalho, M. A. Uman, D. M. Jordan and R. C. Moore

## 2016

257. Luminosity Progression in Dart-Stepped Leader Step Formation, *J. Geophysical Research- Atmospheres*, doi:10.1002/2016JD025813, December 23, 2016, D. Wang, N. Takagi, M. A. Uman, and D. M. Jordan
256. Initial breakdown and fast leaders in lightning discharges producing long lasting disturbances of the lower ionosphere, *J. Geophysical Research – Space Physics*, doi:10.1002/2015JA022266, June 28, 2016, D. A. Kotovsky, R. C. Moore, Y. Zhu, M. D. Tran, V. A. Rakov, J. T. Pilkey, J. A. Caicedo, B. Hare, D. M. Jordan and M. A. Uman
255. Ground-level Observation of a Terrestrial Gamma Ray Flash Initiated by a Triggered Lightning, *J. Geophysical Research – Atmospheres*, doi:10.1002/2015JD024426, June 1, 2016, B. M. Hare, M. A. Uman, J. R. Dwyer, D. M. Jordan, M. I. Biggerstaff, J. A. Caicedo, F. L. Carvalho, R. A. Wilkes, D. A. Kotovsky, W. R. Gameraota, J. T. Pilkey, T. K. Ngim, R. C. Moore, H. K. Rassoul, S. A. Cummer, J. E. Grove, A. Nag, D. P. Betten, A. Bozarth
254. Return Stroke Current Reflections in Rocket-Triggered Lightning, *J. Geophysical Research - Atmospheres*, 121, 2973-2993, doi:10.1002/2015JD024139, March 30, 2016, J. A. Caicedo, C. Biagi, M. A. Uman, D. M. Jordan, and B. Hare
253. Luminosity in the Initial Breakdown Stage of Cloud-to-Ground and Intracloud Lightning, *J. Geophysical Research – Atmospheres*, 121, 1236-1247, doi:10.1002/2015JD024137, February 3, 2016, R. A. Wilkes, J. T. Pilkey, M. A. Uman, D. M. Jordan
252. The Attachment Process of Rocket-Triggered Lightning Dart-Stepped Leaders, *J. Geophysical Research – Atmospheres*, 121, 853-871, doi:10.1002/2015JD024269, January 29, 2016, J. D. Hill, M. A. Uman, D. M. Jordan, T. Ngim, W. R. Gameraota, J. Pilkey and J. Caicedo

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11. Modeling of TM and TE VLF Atmospheric Noise, R & D Associates, P.O. Box 9695, Marina del Rey, CA 96295, RDA-TR-02261 28902-001, August 1989; C. Greifinger, M. Grover, and M.A. Uman.
10. Recommended Baseline Direct-Strike Lightning Environment for Stockpile-to-Target Sequences, Sandia Report for Stockpile-to-Target Sequences, Sandia Report SAND 81-0192, VC-13, May 1989; R.J. Fisher and M.A. Uman.

#### **1988**

9. VLF/LF Noise Modeling Issues, RDA-TR-0226128902-001, R & D Associates, P.O. Box 9695, Marina del Rey, CA 90295, prepared for Director, Defense Nuclear Agency, Dec. 1988, C. Greifinger, M. Grover, M.A. Uman.

## **1986**

8. Voltages Induced by Lightning on Electric Power Distribution Lines: Field Data and Analysis Results for the Period July 1984-1986, M.A. Uman, E.M. Thomson, J.W. Stone, P. Medelius, and M. Rubinstein, ONRL/Sub/84-89650/1, Energy Division, Oak Ridge National Laboratory, Oak Ridge, Tennessee 37831.

## **1982**

7. Lightning Protection of Distribution Systems, U.S. Department of Energy, DOE/ET/29066-I, September 1982, M. Darveniza and M.A. Uman.

## **1981**

6. Atmospheric Electricity Hazards Analytical Model Development and Application, Vol. I: Lightning Environment Modeling, M.A. Uman and E.P. Krider, Flight Dynamics Laboratory Air Force Wright Aeronautical Laboratories, AFWAL-TR-81-3084, Wright Patterson AFB, Ohio 45433, August 1981.

## **1972**

5. Lightning Criteria Relative to Space Shuttles: Currents and Electric Field Intensity in Florida Lightning, NASA CR-2161, November 1972, 39 pages, M.A. Uman and D.K. McLain.

## **1971**

4. About 20 Westinghouse Research Laboratories Reports Dated 1965-1971. The significant information from these has been published in the reviewed literature.

## **1970**

3. A Comparison of Natural Lightning and the Long Laboratory Spark with Application to Lightning Testing, Report No. NA-69-27 (DS-69-16), Project No. 520-002-03X, August 1970, 50 pages, Department of Transportation, Federal Aviation Administration, M.A. Uman.

## **1959**

2. Electric Breakdown across Dielectric Surfaces in Ambient Atmospheres of Air and of SF<sub>6</sub> for Point Electrodes, Tech. Memo. 77, AEC Research and Development Reports, Project Matterhorn, June 17, 1959, M.A. Uman.
1. Notes on Some Anomalies of Gaseous Breakdown in the Presence of a Dielectric Surface, Tech. Memo. 76, AEC Research and Development Reports, Project Matterhorn, June 17, 1959, M.A. Uman.

## **UNIVERSITY COMMITTEES**

UF Faculty Development Committee 2011

UF Search Committee for Dean of College of Engineering 2008

UF Faculty Development Committee 2007-2008

UF Search Committee for Chair of Department of Computer and Information Science & Engineering, 2001

UF Search Committee for Vice President for Administrative Affairs, 2000-2001

UF University Senate, 1996-1997, 1997-1998

UF Search Committee for Associate Director of Development-UF College of Engineering, 1994

UF Search Committee for Associate Dean for Academic Programs and Student Affairs in the Graduate

School, 1994  
UF Committee on Graduate Fee Waivers, 1993-1994  
UF University Senate 1993-1995  
UF Financial Resources Committee, June 1991 - present.  
UF Division of Sponsored Research Board of Directors, 1990-1991

## **COLLEGE COMMITTEES**

Operations Advisory Council 2013, 2014, 2015, and 2016  
Distinguished Professor Candidate Evaluation Committee 2004 – Present

## **DEPARTMENT COMMITTEES**

Faculty Development Committee 2011-2018  
Search Committee for New Faculty 2006-2007  
Sabbatical and Professional Development Leave Program Selection Committee, 2004 - Present  
Graduate Admission and Aid Committee, 2004 - 2006  
Search Committee for the Intel Chair Search, 2004-Present  
Search Committee for new faculty, 2004 - 2005  
Departmental Personnel Board, 2003-Present  
Chairman, Search Committee for Department Chairperson, 1990.  
Departmental Advisory Committee, 1988-1991.  
Hiring, Promotion, Tenure Committee (Faculty Development), 1974-1990; Chairman, 1975-1976, 1978-1979, 1986-1987, 1988-1990.  
Graduate Committee, 1972-1975, 1978-1985, 1988-1989.  
Chairman, Awards Committee, 1984-1986.  
Search Committee for a Department Chairman, 1977-1978.  
Committee on Committees, 1976-1977.  
Graduate Coordinator, 1978-1982.  
Electromagnetic Curriculum Committee, 1972-1986.  
Chairman, Search Committee for a Department Chairperson 1973-1974.

## **COURSES TAUGHT**

Plasma Physics for Electrical Engineers, undergraduate and graduate  
Introductory Electrical Engineering, sophomore level.  
Electromagnetic Field Theory, undergraduate and graduate.  
Physical Electronics, undergraduate and graduate.  
Atmospheric Electricity, graduate.  
Lightning, graduate.

## **MASTER'S AND PH.D. THESES SUPERVISED**

**(34 Master's thesis, 6 being co-chaired, and 18 PhD dissertations)**

52. Felipe Lenz Carvalho, 2018, Return Stroke Characteristics, Doctoral
51. Robert Wilkes, 2016, Luminosity of Initial Breakdown Pulses, Masters
50. Brian Hare, 2016, Lightning and Cosmic Rays, Doctoral
49. Jaime Caicedo, 2016, Optical and LMA Lightning Studies, Doctoral
48. John T. Pilkey, 2014, Triggered and Natural Lightning Behavior from LMA Observations, Doctoral
47. William Gamerota, 2014, The Physics of Dart Stepped Leaders, Doctoral
46. Terry Ngin, 2014, The Lightning Triggering Process, Doctoral
45. Jonathan D. Hill, 2012, X-rays and gamma rays, Doctoral
44. Christopher Biagi, 2010, Lightning Initiation, Doctoral
43. Joseph Howard, December 2009, Source Locations and Physical Mechanisms for Lightning-Generated X-rays, Doctoral.
42. Jens Schoene, May 2007, Triggered Lightning Interactions with Two Test Power Distribution Lines,



- Doctoral.
41. Jason Jerauld, August 2007, Properties of Natural Cloud to Ground Lightning Inferred from Close Multiple-Station Measurements of Electric and Magnetic Fields and Field Derivatives, Doctoral.
  40. Brian DeCarlo, May 2005, Triggered Lightning Testing of the Performance of Grounding Systems in Florida Sandy Soil, Masters. (Co-Chair).
  39. Ashwin Jhavar, 2005, Triggered Lightning Properties Inferred from Measured Currents and Very Close Magnetic Fields, Masters. (Co-Chair).
  38. Vinod Jayakumar, 2004, Estimating power, energy, and action integral in rocket-triggered lightning, Masters. (Co-Chair).
  37. Olsen, Robert, 2003, Optical characterization of rocket-triggered lightning at Camp Blanding, Florida. Masters. (Co-Chair).
  36. Venkateswararao Kodali, 2003, Characterization and Analysis of Close Lightning Electromagnetic Fields, Masters, (Co-Chair).
  35. Angel Mata, 2003, Interaction of Lightning with Power Distribution Lines: 2001 and 2002 Experiments at the International Center for Lightning Research and Testing (ICLRT), Masters. (Co-Chair).
  34. Jason Jerauld, 2003, A multiple-station experiment to examine the close electromagnetic environment of natural and triggered lightning, Masters.
  33. Jens Schoene, 2002, Analysis Of Parameters Of Rocket-Triggered Lightning Measured During The 1999 And 2000 Camp Blanding Experiment And Modeling Of Electric And Magnetic Field Derivatives Using The Transmission Line Model, Masters.
  32. Mirela Bejleri, 1999, Triggered-Lightning Testing of an Airport Runway Lighting System, Masters.
  31. Stephen Mark Davis, 1999, Properties of Lightning Discharges From Multiple-Station Wideband Electric Field Measurements, Doctoral.
  30. Mark I. Fernandez, 1998, Responses of an Unenergized Test Power Distribution System to Direct and Nearby Lightning Strikes, Masters.
  29. Joseph A. Bach, 1996, Instrumentation for Measuring Electric and Magnetic Fields at Different Distances from Lightning Discharge, Masters.
  28. Yong Su, 1995, Testing of the Engineering Model of the Galileo Lightning and Radio Emission Detector, Masters.
  27. Joseph Versaggi, 1994, The Measurement of Near and Distant Electromagnetic Fields of Lightning, Masters.
  26. Yuri Villanueva, 1992, Microsecond-Scale Electric-Field Pulses in Cloud Lightning Flashes, Masters.
  25. Rajeev Thottappillil, 1992, A Study of Cloud-to-Ground Lightning Processes with Emphasis on Data Analysis and Modeling of the Return Stroke, Doctoral.
  24. Marcos Rubinstein, 1991, Voltages Induced on a Test Power Line from Artificially Initiated Lightning: Theory and Experiment, Doctoral.
  23. Ziad Yacoub, 1990, Power Line Induced Voltages from Overhead Lightning, Masters.
  22. Douglas Jordan, 1990, Relative Light Intensity and Electric Field Intensity of Cloud-to-Ground Lightning, Doctoral.
  21. Rajeev Thottappillil, 1989, Electric Field Changes due to K Processes and M Components in Cloud-to-Ground Lightning Flashes, Masters.
  20. Nikolaos Georgiadis, 1988, Voltages at Both Ends of A Test Power Line Induced by Lightning at the Kennedy Space Center in 1986, Masters.
  19. John Bils, 1986, Analysis of the Wideband Vertical Electric Field Produced by Cloud Discharges, Masters.
  18. Andrew Tseng, 1986, Coupling of Lightning Electromagnetic Fields to Power Lines, Masters.
  17. Marcos Rubinstein, 1986, A Theoretical Study of the Relation between Vertical and Horizontal Electric Fields at Ground Level from Lightning, Masters.
  16. Pedro Medelius, 1986, Design of a System to Measure Simultaneously the Horizontal and Vertical Components of the Lightning Electric Field, Masters.
  15. Chester Wilcox, Jr., 1983, Location of Lightning by Direction Finding and Signal Strength, Masters.
  14. C. Ganesh, 1983, Photoelectric and Electric Field Measurements on Lightning Return Strokes, Masters.
  13. Maneck Master, 1982, Lightning Induced Effects on Overhead Wires, Doctoral.
  12. David Peckham, 1982, Statistics on Lightning in the Tampa Bay Area during Summer 1979,

- Masters.
11. Douglas Jordan, 1981, Optical Properties of Lightning Return Stroke, Masters.
  10. Roderick Frowd, 1980, Calculation of the Lightning Response of Distribution Lines, Masters.
  9. Natasha Khuwaryi, 1980, Modeling of the Lightning Flash for the Prediction of the Backflashover Rates of Transmission Lines, Masters.
  8. Pedro Rustan, Jr., 1979, Properties of Lightning Derived from Time Series Analysis of VHF Radiation Data, Doctoral.
  7. Kamil Samra, 1979, Refinement of the Electrogeometric Model for Calculating the Frequency of Lightning Strokes and Shielding Failures on Overhead Lines, Masters.
  6. Y.T. Lin, 1978, Lightning Return Stroke Models, Doctoral.
  5. G. Serhan, 1978, The Spectra of Lightning Return Strokes in the Distance Range of 1-200 km, Masters.
  4. Thomas McDonald III, 1977, Two Station Lightning Location and Lower Ionospheric Height Determination, Masters.
  3. James Tiller, 1975, Electric and Magnetic Field Statistics for Close Lightning Return Strokes, Masters.
  2. Bradley Herrman, 1975, Tests of a Wideband Magnetic Field System for Direction Finding of Close Lightning, Masters.
  1. Richard Brantley, 1975, An Integrated System for Lightning Electromagnetic Measurements, Masters.