

# Lincan Yan

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## EDUCATION

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•2003.8 – 2011.2

Ph.D., Electrical and Computer Engineering department, School of Engineering, University of New Mexico (UNM), Albuquerque, NM, USA. Majored in applied electromagnetics

•2001.8 – 2003.8

Master of Science, Mechanical Engineering department, School of Engineering, University of New Mexico, Albuquerque, NM, USA. Majored in material dislocation numerical simulations

•1998.9 – 2001.7

Master of Engineering, Engineering Mechanics department, Tsinghua University, Beijing, P.R. China. Majored in applied mechanics

•1992.9 – 1996.7

Bachelor of Engineering, Mining Industry Engineering department, Northeastern University, Shenyang, P.R. China

## WORK EXPERIENCE

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•2011.2 – present

Research scientist for the Office of Mine Safety and Health Research (OMSHR), the National Institute for Occupational Safety and Health (NIOSH), Centers for Disease Control and Prevention (CDC)

•2005.5 – 2011.2

Research assistant, Electrical and Computer Engineering department, University of New Mexico

•2001.8 – 2003.6

Research assistant, Mechanical Engineering department, University of New Mexico

•1996.8 – 1998.8

Employee of the Bureau of Coal and Metallurgy, Ji An, JiangXi Province, P.R. China

## TEACHING EXPERIENCE

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•2004.8 – 2004.12

Teaching assistant, *Electronics II*

•2004.1 – 2004.5

Teaching assistant and lab tutor, *Circuit II, Electronics I*

•2003.8 – 2003.12

Teaching assistant, *Circuit I*

## RESEARCH EXPERIENCE

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•2013 – present

## Investigation of Enhanced Refuge Alternatives, OMSHR

•2012 – present

Intelligent Safety Technologies for Mining Machinery, OMSHR

•2011.2 – present

Communication and Tracking (CT) systems for mining environment, OMSHR

•2005.8 – 2011.2

Investigation for the physics and controlling of turbulence and transport in both laboratory and fusion plasmas, UNM

•2001.8 – 2003.12

3D Dislocation Dynamics (DD) simulations in metal-matrix composites, UNM

## RESEARCH INTEREST

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Very low frequency (VLF)/extremely low frequency (ELF), medium frequency (MF), and ultra-high frequency (UHF)/very high frequency (VHF) communication and tracking for mining/tunnel environment, ground penetrating radar, machine proximity warning system, solid/fluid mechanics, computational mechanics, heat transfer within confined space, computational electromagnetics, etc.

## PROFESSIONAL MEMBERSHIPS

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•2005 – 2012

American Physical Society (APS)

•2012 – present

Institute of Electrical and Electronics Engineers (IEEE)

## PUBLICATIONS (Journal)

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1. L. Yan, "The magnetic field above stratified multi-layer in through-the-earth wireless communications for coal mines," *IEEE Antennas and Wireless Propagation Letters*, to be submitted, 2017
2. L. Yan, "Electromagnetic field for coplanar VLF/ELF through-the-earth communication," *IEEE Antennas and Wireless Propagation Letters*, to be submitted, 2017
3. J. Li, B. Whisner, L. Yan, M. Reyes, "An introduction to a method of evaluation of signal propagation of a medium frequency communication system in a transmission line network in underground coal mines," *Journal of Electromagnetic Waves and Applications*, submitted, 2017
4. P. Bissert, D. Yantek, J. Srednicki, J. Yonkey, L. Yan, "The effects of seasonal heat and humidity on mine strata temperatures in underground coal mines," *Journal of Society for Mining, Metallurgy, and Exploration*, submitted, 2017
5. L. Yan, C. Zhou, M. Reyes, B. Whisner, N. Damiano, "E-fields of electrode-based through-the-earth (TTE) communication," *Radio Science*, submitted, 2017
6. L. Yan, D. Yantek, P. Bissert, "Temperature and humidity tests for mobile refuge alternatives," *Journal of Society for Mining, Metallurgy, and Exploration*, submitted, 2017
7. N. Damiano, L. Yan, B. Whisner, C. Zhou, "Simulation and measurement of through-the-earth (TTE), extremely low-frequency signals using copper-clad, steel ground rods," *IEEE Transactions on Industry Applications*, submitted, 2017

8. C. Zhou, M. Reyes, P. Kovalchik, N. Damiano, L. Yan, "Time domain and frequency domain deterministic channel modeling for tunnel/mining environments," *IEEE Transactions on Vehicular Technology*, to be submitted, 2016
9. L. Yan, D. Yantek, M. Klein, P. Bissert, R. Matetic, "Temperature rise within a mobile refuge alternative (RA) - experimental investigation and model validation," *Journal of Thermal Science and Engineering Applications*, 9(2), 021003, 2017
10. D. Yantek, L. Yan, P. Bissert, "Effects of the constant mine strata temperature assumption and initial mine air and strata temperatures on refuge alternative internal air temperature," *Journal of Society for Mining, Metallurgy, and Exploration*, accepted, in publication queue, 2016
11. P. Bissert, D. Yantek, L. Yan, "Analysis of heat loss mechanisms for mobile tent-type refuge alternatives," *Transactions of Society for Mining, Metallurgy, and Exploration*, accepted, in publication queue, 2016
12. L. Yan, D. Yantek, M. Klein, P. Bissert, "Validation of temperature and humidity thermal model of 23-person tent-type refuge alternative," *Journal of Society for Mining, Metallurgy, and Exploration*, 68(9), 97-103, 2016
13. L. Yan, J. Waynert, C. Sunderman, "Estimation of earth apparent conductivity based on three EM models and field data from 94 mines," *the Applied Computational Electromagnetics Society journal*, 29(10), 755-762, 2014
14. L. Yan, J. Waynert, C. Sunderman, "Measurements and modeling of through-the-earth communications for coal mines," *IEEE Transactions on Industry Applications*, 49 (5), 1979 – 1983, 2013
15. A. Lynn, M. Gilmore, L. Yan, etc., "The HelCat dual-source plasma device," *Review of Scientific Instruments*, 80 (10), 103501-103508, 2009
16. L. Yan, T. A. Khraishi, Y.-L. Shen, M. F. Horstemeyer, "A distributed-dislocation method for treating free-surface image stresses in three-dimensional dislocation dynamics simulations," *Modelling and Simulation in Materials Science and Engineering*, 12 (4), S289, 2004
17. T. A. Khraishi, L. Yan, Y.-L. Shen, "Dynamic simulations of the interaction between dislocations and dilute particle concentrations in metal–matrix composites (MMCs)," *International Journal of Plasticity*, 20 (6), 1039-1057, 2004
18. L. Yan, B. Xu, "The effect of non-linear elastic unloading on springback prediction," *Mechanics and Application*, 24 (3), 41-43, 2002

#### PUBLICATIONS (Conference Proceeding)

1. L. Yan, C. Zhou, M. Reyes, "Controlling factors of the E-field of electrode-based through-the-earth (TTE) communication," *SME Annual Meeting*, Denver, CO, February 19-22, 2017, accepted.
2. L. Yan, D. Yantek, P. Bissert, "Temperature and humidity tests for mobile refuge alternatives," *SME Annual Meeting*, Denver, CO, February 19-22, 2017, accepted.
3. D. Yantek, L. Yan, "Prediction of human core temperature rise and moisture loss in coal mine refuge alternatives," *SME Annual Meeting*, Denver, CO, February 19-22, 2017, accepted.
4. D. Yantek, G. Homce, T. Lutz, R. Matetic, J. Srednicki, J. Yonkey, L. Yan, "Heat/humidity tests for a built-in-place refuge alternative," *SME Annual Meeting*, Denver, CO, February 19-22, 2017, accepted.
5. P. Bissert, D. Yantek, J. Srednicki, J. Yonkey, L. Yan, "The effects of seasonal heat and humidity on mine strata temperatures in underground coal mines," *SME Annual Meeting*, Denver, CO, February 19-22, 2017, accepted.
6. L. Yan, D. Yantek, M. Klein, P. Bissert, "Interior thermal environment of a 6-person rigid-type refuge alternative (RA)," *The ASME IMECE 2016*, Phoenix, Arizona, November 11-17, 2016, 7 pp.
7. L. Yan, N. Damiano, J. Li, M. Reyes, B. Whisner, C. Zhou, "E-fields of electrode-based through-the-earth (TTE) communication," *IEEE Industry Applications Society 2016*, Portland, Oregon, October 2-10, 2016, 8 pp.

8. N. Damiano, L. Yan, M. Reyes, B. Whisner, C. Zhou, "Simulation and measurement of electric field, low frequency signals through the earth," *IEEE Industry Applications Society 2016*, Portland, Oregon, October 2-10, 2016, 7 pp.
9. L. Yan, D. Yantek, M. Klein, P. Bissert, "Temperature and humidity rise for 23-person tent-type mobile refuge alternative," preprint 16-045, *SME Annual Meeting*, Phoenix, Arizona, February 21-24, 2016, 6 pp.
10. D. Yantek, L. Yan, P. Bissert, and M. Klein, "Effects of the constant mine strata temperature assumption and initial mine air and strata temperatures on refuge alternative internal air temperature (Preprint 16-046)," *SME Annual Meeting*, Phoenix, Arizona, February 21-24, 2016, 6 pp.
11. P. Bissert, D. Yantek, M. Klein, and L. Yan, "Analysis of heat loss mechanisms for mobile tent-type refuge alternatives (Preprint 16-025)," *SME Annual Meeting*, Phoenix, Arizona, February 21-24, 2016, 4 pp.
12. L. Yan, D. Yantek, M. Klein, P. Bissert, "In-mine experimental investigation of temperature rise and development of a validated thermal simulation model of a mobile refuge alternative (RA)," *The ASME 2015 IMECE*, Nov 15-19, 2015
13. L. Yan, C. Sunderman, B. Whisner, N. Damiano, C. Zhou, "Antenna arrangement investigation for through the earth (TTE) communication at coal mines," *2015 IEEE IAS Meeting*, Oct 18-26, 2015
14. L. Yan and C. Sunderman, "Electric field of grounded horizontal line transmitter for through-the-earth communication," *31st International Review of Progress in Applied Computational Electromagnetics (ACES 2015)*, March 22-26, Williamsburg, Virginia, 2015.
15. L. Yan, J. Waynert, C. Sunderman, "Statistical analysis and modeling of VLF/ELF noise in coal mines for through-the-earth wireless communications," *IEEE Industry Applications Society*, Oct 5-9, 2014
16. L. Yan, J. Waynert, C. Sunderman, "Loop coupling and field distribution in earth for horizontal positioning in VLF/ELF through-the-earth wireless mine communications," *IEEE International Symposium on Antennas and Propagation and USNC-URSI Radio Science Meeting*, July 6-11, 2014
17. C. Sunderman, L. Yan, J. Waynert, "A system for measuring through the earth radio propagation," *IEEE International Symposium on Antennas and Propagation and USNC-URSI Radio Science Meeting*, July 6-11, 2014
18. L. Yan, J. Waynert, C. Sunderman, "Modeling and estimation of earth electrical conductivity from through-the-earth electromagnetic transmission data from 94 mines," *the 30th International Review of Progress in Applied Computational Electromagnetics (ACES)*, March, 2014
19. L. Yan, J. Waynert, C. Sunderman, "Measurements and modeling of through-the-earth communications for coal mines," *IEEE Industry Applications Society Annual Meeting (IAS)*, October 7-11, 2012
20. M. Gilmore, T. Hayes, S. Xie, L. Yan, "Flow profile changes and fluctuation suppression in a large scale helicon plasma with electrode biasing," *the 38th EPS Conference on Plasma Physics 35G*, 2011
21. M. Gilmore, S. Xie, C. Watts, L. Yan, A. Lynn, "Chaos, intermittency, and sheared flow dynamics under biasing and boundary condition changes in a magnetized laboratory plasma," *the 36th EPS conference on Plasma Phys. 33E*, 2009
22. L. Yan, S. Xie, M. Gilmore, C. Watts, A. Lynn, A. Ware, "Investigation of active feedback control of turbulent transport in a magnetized laboratory plasma (abstract)", *the IEEE 34th International Conference on Plasma Science*, 232, 2007
23. L. Yan, T. A. Khraishi, Y.-L. Shen, M. F. Horstemeyer, "A numerical method for the treatment of image stresses in dislocation dynamics simulations," *the second MIT Conference on Computational Fluid and Solid Mechanics 1*, 776-779, 2003
24. T. A. Khraishi, L. Yan, Y.-L. Shen, "Modelling strengthening mechanisms in solids using dislocation dynamics," *Proceedings of the ASME International Mechanical Engineering Congress and Exposition (IMECE'03)*, 2003

## PRESENTATIONS AND POSTERS

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1. Statistical analysis and modeling of VLF/ELF noise in coal mines for through-the-earth wireless communications. The IEEE Industry Applications Society, Oct 7, 2014, Vancouver, BC Canada.
2. Loop Coupling and Field Distribution in Earth for Horizontal Positioning in VLF/ELF through-the-earth Wireless Mine Communications. The IEEE International Symposium on Antennas and Propagation and USNC-URSI Radio Science Meeting, July 9, 2014, Memphis, Tennessee, USA.
3. Modeling and estimation of Earth electrical conductivity from Through-the-Earth electromagnetic transmission data from 94 mines. The 30th International Review of Progress in Applied Computational Electromagnetics (ACES), March 25, 2014, Jacksonville, Florida, USA.
4. Stability Analysis of Low Frequency Electrostatic Modes in a Large Scale Helicon Plasma in the Presence of Sheared Flows. M. Gilmore, S. Xie, M. Light, L. YAN, C. Watts, and A.G. Lynn. Poster presentation at the 51st Annual Meeting of the American Physical Society Division of Plasma Physics, Nov. 2 - 6, 2009, Atlanta, GA, USA.
5. Parallel Shear and Turbulence. T.R. Hayes, M. Gilmore, C. Watts, S. Xie, and L. YAN. Poster presentation at the 51st Annual Meeting of the American Physical Society Division of Plasma Physics, Nov. 2 - 6, 2009, Atlanta, GA, USA.
6. The HelCat Helicon-Cathode Device at UNM. B. Cyrin, C. Watts, M. Gilmore, T.R. Hayes, R. Kelly, C. Leach, A. Lynn, A. Sanchez, S. Xie, L. YAN, and Y. Zhang. Poster presentation at the 51st Annual Meeting of the American Physical Society Division of Plasma Physics, Nov. 2 - 6, 2009, Atlanta, GA, USA.
7. Nonlinear Dynamics under Applied Electric Fields at a Magnetized Laboratory Plasma Edge. S. Xie, M. Gilmore, C. Watts, and L. YAN. Poster presentation at the 51st Annual Meeting of the American Physical Society Division of Plasma Physics, Nov. 2 - 6, 2009, Atlanta, GA, USA.
8. Observation of Chaos in a Magnetized Laboratory Plasma Due to an Applied Electric Field. S. Xie, C. Watts, M. Gilmore, L. YAN. Poster presentation at the 50th Annual Meeting of the American Physical Society Division of Plasma Physics, Nov. 17 - 21, 2008, Dallas, TX, USA.
9. Convective Blobs in the Presence of Sheared Flows in a Magnetized Laboratory Plasma. L. YAN, M. Gilmore, C. Watts. Poster presentation at the 50th Annual Meeting of the American Physical Society Division of Plasma Physics, Nov. 17 - 21, 2008, Dallas, TX, USA.
10. The HelCat Helicon-Cathode Device at UNM. B. Cyrin, C. Watts, M. Gilmore, R. Kelly, A. Lynn, S. Xie, L. YAN, Y. Zhang. Poster presentation at the 50th Annual Meeting of the American Physical Society Division of Plasma Physics, Nov. 17 - 21, 2008, Dallas, TX, USA.
11. Nonlinear Dynamics of Fluctuations in the Presence of Sheared Parallel and Perpendicular Flows in a Magnetized Laboratory Plasma. M. Gilmore, L. YAN, S. Xie, C. Watts, and A.G. Lynn. Presentation at the 2008 IEEE International Conference on Plasma Science (ICOPS), June 15 - 19, 2008, Karlsruhe, Germany.
12. Nonlinear Dynamics of Fluctuations in the Presence of Sheared Flows in a Magnetized Laboratory Plasma. M. Gilmore, L. YAN, S. Xie, and C. Watts. Presentation at the 2008 US Transport Task Force Meeting, March 25 - 28, 2008, Boulder, CO, USA.
13. Nonlinear Dynamics of Fluctuations and Convective Blobs in the Presence of Sheared Flows in a Magnetized Laboratory Plasma. L. YAN, M. Gilmore, S. Xie, and C. Watts. Poster presentation at the 49th Annual Meeting of the American Physical Society Division of Plasma Physics, Nov. 12 - 16, 2007, Orlando, FL, USA.
14. Observation of Chaos in a Magnetized Laboratory Plasma under the Influence of Variable Biasing. S. Xie, C. Watts, M. Gilmore, and L. YAN. Poster presentation at the 49th Annual Meeting of the American Physical Society Division of Plasma Physics, Nov. 12 - 16, 2007, Orlando, FL, USA.
15. Dual Source Operation of the HELCAT (Helicon-Cathode) Plasma Device. C. Watts, M. Gilmore, A. Lynn, R. Kelley, S. Xie, L. YAN, and Y. Zhang. Oral presentation at the 49th Annual Meeting of the American Physical Society Division of Plasma Physics, Nov. 12 - 16, 2007, Orlando, FL, USA.
16. Nonlinear Dynamics of Fluctuations in the Presence of Sheared Flows in a Magnetized Laboratory Plasma. L. YAN, M. Gilmore, S. Xie, C. Watts, and A.G. Lynn. Oral presentation at the IEEE International Pulsed Power and Plasma Science Conference, June 18 - 22, 2007, Albuquerque, NM, USA.
17. Characterization and Overview of the HELCAT (HELicon-CATHode) Dual-Source Linear Plasma Device. M. Gilmore, C. Watts, L. YAN, S. Xie, A.G. Lynn, R. Kelly, Y. Zhang, J. Hollowell, E.A. Kadlec, S.C. Hsu, and J.L. Kline. Poster presentation at the IEEE International Pulsed Power and Plasma Science Conference, June 18 - 22, 2007, Albuquerque, NM, USA.
18. Investigation of Intermittent Turbulence and Turbulent Structures in the Presence of Controlled Sheared Flows. Yan, Lincan, Gilmore, Mark, Crocker, Neal, Carter, Troy, Peebles, Tony. Poster presentation at the 48th Annual

Meeting of the American Physical Society Division of Plasma Physics, Oct. 30 – Nov. 3, 2006, Philadelphia, PA, USA..

19. L. Yan, M. Gilmore, N.A. Crocker, W.A. Peebles, T.A. Carter, G.Y. Antar, 2005, “Magnetic fields scaling of turbulence and transport in the LAPD”, poster presentation. The 47h APS Annual Meeting (DPP), Oct 23-28, 2005, Denver, Colorado.
20. “Complex Dynamics of Electrostatic Turbulence and Particle Transport in the Large Plasma Device”, poster presentation co-authored by M. Gilmore, L. Yan (University of New Mexico), N.A. Crocker, W.A. Peebles, T.A. Carter (University of California, Los Angeles) , the 46th APS Annual Meeting (DPP), Nov 15-19, 2004, Savannah, GA.
21. Simulations of Strengthening in Metal Matrix Composites Using Dislocation Dynamics (DD). Lincan Yan, Tariq Khraishi, and Yu-Lin Shen, a proceedings abstract and poster presentation at the 14th Annual Rio Grande Regional Symposium on Advanced Materials, 2002, Albuquerque, New Mexico. (Fall 2002)
22. Measurements and modeling of through-the-earth communications for coal mines. L. Yan, J. Waynert, C. Sunderman. Oral presentation at the IEEE Industry Application Society Annual Meeting, Oct 7 - 11, 2012, Las Vegas, NV, USA.