Curriculum Vitae of Professor Lou-Chuang Lee

Name

Lou-Chuang Lee 李羅權

Distinguished Visiting Chair of Institute of Earth Sciences, Academia Sinica

Li Kwoh Ting Chair Professor of National Central University, Institute of Space Science

Address

Academia Sinica, Institute of Earth Sciences

128, Sec. 2, Academia Road, Nangang, Taipei 115, Taiwan

TEL：+886-2-2783-9910 ext. 304 ; +886-911-596-880

FAX：+886-2-2783-9871

E-mail：louclee@earth.sinica.edu.tw

Degrees

Ph. D. Physics, California Institute of Technology, 1975

M. S. Physics, California Institute of Technology, 1972

B. S . Physics, National Taiwan University, 1969

Employment / Research Experience

1. Director, Institute of Earth Sciences, Academia Sinica(2014-2017)
2. Distinguished Research Fellow, Institute of Earth Sciences, Academia Sinica(2012-2017)
3. National Science Council, Minister, 2008 – 2012.
4. National Central University, President, 2006 – 2008.
5. National Central University, Institute of Space Science, Professor, 2006 –2017.
6. National Applied Research Laboratories, Founding President, 2003 – 2006.
7. National Space Organization (NSPO), Chief Scientist, 1997 – 2001; Director, 2001 – 2003.
8. National Cheng Kung University, College of Science, Dean, 1995 – 2001.
9. University of Alaska, Geophysical Institute, Professor, 1978 – 1995.
10. University of Maryland, Institute for Physics Science and Technology, Visiting Assistant Professor, 1977 – 1978.
11. NASA/Goddard Space Flight Center, Research Associate, 1975 – 1977.
12. Visiting Professor / Scientist: Tokyo University (1986), University of Maryland (1985,1987), National Central University (1990), Princeton University (1991), China University of Science and Technology (1990), Nagoya University (1996).

HONORS AND AWARDS

1. Japan Toray Science Foundation Fellow, 1986.
2. Terris Moore Award in Space Physics, “For his work on auroral kilometric radition”, Terris Moore, Boston and University of Alaska, 1987.
3. Outstanding Faculty Performance Award, University of Alaska, 1988.
4. Fulbright Distinguished Scholar, Institute for Space Research, Dos Campos, Brazil, 1988.
5. Honorary Professor, Center for Space Science and Application, Chinese Academy of Sciences (Beijing), 1990.
6. International Guest Professor, China University of Science and Technology, Hefei, China, 1990

7. Emil Usibelli Distinguished Research Award, University of Alaska, 1994.
8. Outstanding Scholar, Foundation of the Advancement of Outstanding Scholarship, Taiwan, 1996-2001.
9. Outstanding Research Achievement Award, National Science Council 1997-1998, 2001-2002.
10. Outstanding Performance Award, “For his contribution to FORMOSAT-1 Project”, National Science Council, 1999.
11. Fellow, Physical Society of the Republic of China, 2000.
12. Academic Award, Ministry of Education, Taiwan, 2001.
13. Elected Academician, Academia Sinica, Taiwan, 2002.
14. Li Kwoh Ting Chair Professor, National Central University, 2005, 2012-2017.
15. Fellow, Meteorological Society of the Republic of China, 2005.
16. The Presidential Science Prize (The highest honor in science in Taiwan), “For his outstanding contributions in space science and his implementation of two world-class space programs, FORMOSAT-2 and FORMOSAT-3”, 2005.
17. Elected Member, The Academy of Sciences for the Developing World (TWAS), 2006.
18. Elected Member, International Academy of Astronautics (IAA), 2007.
19. Elected Member, International Academy of Engineering, Russian Academy of Engineering (IAE), 2011.
20. Achievement Medal (First Rank), “For promotion of science and technology in Taiwan during his tenure as Minister of National Science Council”, Executive Yuan, Taiwan, 2012.
21. Distinguished Lecture, at Asia Oceania Geosciences Society (AOGS) Annual Meeting in Brisbane, 2013.
22. Subramanyan Chandrasekhar Prize of Plasma Physics (AAPPS-DPP), 2017.

Memberships

1. American Geophysical Union.
2. American Physical Society.
3. The Physical Society of Republic of China, Fellow.
4. Association of Asia Pacific Physical Societies (Division of Plasma Physics)
5. The Meteorological Society of the Republic of China, Fellow.
6. Asia Oceania Geosciences Society.

Service to the community

1. Associate Editor, Journal of Geophysical Research (Space Physics), American Geophysical Union, 1989 – 1991.
2. Editor-in-Chief, Terrestrial, Atmospheric and Oceanic Sciences (TAO), Chinese Geoscience Union (Taiwan), 1997 – 2001.
3. Editorial Board Member, Chinese Journal of Geophysics (China), 2001-2012.
4. President, Chinese Geoscience Union (CGU), 2001-2003.
5. Editor, Journal of Geophysical Research (Space Physics), American Geophysical Union, 2001 – 2005.
6. President, Aeronautical and Astronautical Society of the Republic of China (AASRC), 2003 – 2005.
7. President, National Committee of Republic of China for International Union of Radio Science (URSI), 2006 – present.

Selected Bibliography

Professor L. C. Lee has published 306 papers in scientific journals and monographs. The total number of citations based on WoS (Web of Science) is 8,021 and h-index is 46. The total number citations based on Google Scholar is 11,216 and h-index is 57.(November 9, 2017)

(1) Theory of strong scintillations and interstellar turbulence spectrum

Lee, L. C., and J. R. Jokipii, Strong scintillations in astrophysics, I. The Markov approximation, its validity and application to angular broadening, Astrophys. J., 196, 699, 1975.

Lee, L. C., and J. K. Jokipii, Strong scintillations in astrophysics, II. A theory of temporal broadening of pulses, Astrophys. J., 201, 532, 1975.

Lee, L. C., and J. R. Jokipii, Strong scintillations in astrophysics, III. The fluctuations in intensity, Astrophys. J., 202, 349-453, 1975.

Lee, L. C., and J. R. Jokipii, The irregularity spectrum in interstellar space, Astrophys. J., 206, 735-743, 1976.

(2) A theory of auroral kilometric radiation

Wu, C. S., and L. C. Lee, A theory of the terrestrial kilometric radiation, Astrophys. J., 230, 621-626, 1979.

Lee, L. C. and C. S. Wu, Amplification of radiation near cyclotron frequencydue to electron population inversion, Phys. Fluids, 23, 1348, 1980.

Lee, L. C., J. R. Kan and C. S. Wu, Generation of auroral kilometric radiation and the structure of auroral acceleration region, Planet. Space Sci., 28, 703,1980.

(3) The structure, stability and particle transport across tangential discontinuty and rotational discontinuty at the Earth's magnetopause

Lee, L. C., and J. R. Kan, A unified kinetic model of the tangential magnetopause structure, J. Geophys. Res., 84, 6417-6426, 1979.

Kan, J. R., and L. C. Lee, Energy coupling function and solar wind-magnetosphere dynamo, Geophys. Res. Lett., 6, 577-580, 1979.

Lee, L. C., R. K. Albano, and J.R. Kan, Kelvin-Helmholtz instability in the magnetopause-boundary layer region, J. Geophys. Res., 86, 54-58, 1981.

Swift, D. W., and L. C. Lee, Rotational discontinuities and the structure of the magnetopause, J. Geophys. Res., 88, 111-124, 1983.

Lee, L. C., J. R. Johnson, and Z. W. Ma, Kinetic Alfven waves as a source of plasma transport at the dayside magnetopause, J. Geophys. Res., 99, 17405-17411, 1994.

(4) A theory of multiple scattering of coda waves for local earthquakes

Gao, L. S., L. C. Lee, N. N. Biswas, and K. Aki, Comparison of the effects between single and multiple-scattering on coda waves for local earthquakes, Bull. Seim. Soc. Am., 73, 377-389, 1983.

Gao, L. S., N. N. Biswas, L. C. Lee, and K. Aki, Effects of multiple scattering on coda wave in three-dimensional medium, Pure Appl. Geophys., (PAGEOPH), 121, 3-15, 1983.

(5) A theory of flux transfer events

Lee, L. C. and Z. F. Fu, A theory of magnetic flux transfer at the Earth's magnetopause, Geophys. Res. Lett., 12, 105, 1985.

Lee, L. C., and Z. F. Fu, Multiple X-line reconnection: 1. A criterion for the transition from a single X-line to a multiple X-line reconnection, J. Geophys. Res., 91, 6807-6815, 1986.

Lanzerotti, L. J., L. C. Lee, C. G. Maclennan, A. Wolfe, and L.V. Medford, Possible evidence of flux transfer events in the polar ionosphere, Geophys. Res. Lett., 13, 1089, 1986.

(6) Effects of minor ions and electromagnetic ion cyclotron waves and harmonics mirror waves in the Earth's magnetosheath

Price, C. P., D.W. Swift, and L. C. Lee, Numerical simulation of nonoscillatory mirror waves at the Earth's magnetosheath, J. Geophys. Res., 91, 101-112, 1986.

Lee, L. C., C. P. Price, and C. S. Wu, A study of mirror waves generated downstream of a quasi-perpendicular shock, J. Geophys. Res., 93, 247-250, 1988.

Kun-Han Lee and Lou-Chuang Lee, Generation of He+ and O+ EMIC waves by the bunch distribution of O+ ions associated with fast magnetosonic shocks in the magnetosphere, Geophys. Res. Lett. 43, 9406, 2016.

(7) Formation mechanism and eruption mechanism of solar prominences

Choe, G. S. and L. C. Lee, Formation of solar prominences by photospheric shearing motions, Solar Physics, 138, 291, 1992.

Choe, G. S. and L. C. Lee, Evolution of solar magnetic arcades. II. Effect of resistivity and solar eruptive processes, Astrophys. J., 472, 372, 1996.

Professor Eugene Parker wrote in his personal letter to Dr. Lee, stating " This study (dynamic formations of solar prominence) is a big step forward from the usual static models ".

(8) Off-diagonal terms of pressure tensor and collisionless magnetic reconnection

Cai, H. J., D. Q. Ding, and L. C. Lee, Momentum transport near a magnetic X line in collisionless reconnection, J. Geophys. Res., 99, 35-42, 1994.

Cai, H. J., and L. C. Lee, The generalized Ohm's law in collisionless magnetic reconnection, Phys. Plasmas, 4, 509, 1997.

Prof. Jim Dungey wrote in a personal letter to Dr. Cai, stating "I think your paper marks the breakthrough".

(9) A heating mechanism for protons and minor ions by fast shocks

Lee, L. C., C. S. Wu, and X. W. Hu, Increase of ion kinetic temperature across a collisionless shock: 1. A new mechanism, Geophys. Res. Lett., 13. 209-212, 1986.

Lee, L. C., and B. H. Wu, Heating and acceleration of protons and minor ions by fast shocks in solar coronal, Astrophys. J., 535, 1014, 2000.

(10) Discovery of "gigantic jets" in the atmosphere

Su, H. T., R. R. Hsu, A. B. Chen, Y. C. Wang, W. S. Hsiao, W. C. Lai, L. C. Lee, M. Sato and H. Fukunishi, Gigantic jets between a thundercloud and the ionosphere, **Nature**, 423, 974, 2003.

Mende, S. B., H. U. Frey, R. R. Hsu, H. T. Su, A. B. Chen, L. C. Lee, D. D. Sentman, Y. Takahashi, and H. Fukunishi, D region ionization by lightning-induced electromagnetic pulses, J. Geophys. Res., 110, A11312, 2005.

Chen, A. B., Cheng-Ling Kuo, Yi-Jen Lee, Han-Tzong Su, Rue-Ron Hsu, Jyh-Long Chern, Harald U. Frey, Stephen B. Mende, Yukihiro Takahashi, Hiroshi Fukunishi, and Lou-Chuang Lee, Global distributions and occurrence rates of transient luminous events, J. Geophys. Res., 113, A08306, 2008.

Professor Lou-Chuang Lee 李羅權

Professor Lou-Chuang Lee was born on April 20, 1947. He received a B.S. degree in physics from National Taiwan University in 1969, and M.S. and Ph.D. degrees in physics from the California Institute of Technology in 1972 and 1975, respectively. He specializes in space science and plasma physics. From 1975 to 1995, he performed advanced research at the NASA/Goddard Space Flight Center and served as a professor at the University of Maryland and University of Alaska. Upon returning to Taiwan in 1995, Prof. Lee joined the faculty of Department of Physics at the National Cheng Kung University, and also served as the Dean of the College of Science. He was appointed the chief scientist at National Space Program Office in 1997, and made director of National Space Program Office in 2001. Since that time he has led the science and engineering teams implementing the FORMOSAT-2 and FORMOSAT-3 programs. In 2003, he became the first President of the National Applied Research Laboratories and the President of National Central University in 2006. In 2008, he was appointed as the Minister of National Science Council. He is a distinguished research fellow of Institute of Earth Sciences, Academia Sinica from 2012 to 2017.

Prof. Lee has received many international as well as national awards, including the Toray Science Foundation Fellow, the Terris Moore Award in space physics, the Outstanding Faculty Performance Award, the Fullbright Scholar Award, the Emil Usibelli Distinguished Research Award, the Foundation for the Advancement of Outstanding Scholarship Award, the Ministry of Education's Outstanding Academic Award, The Presidential Science Prize (The highest honor in science in Taiwan), Academician of Academia Sinica, Elected Member of the Academy of Sciences for the Developing World (TWAS), Elected Member of International Academy of Astronautics (IAA), Elected Member of International Academy of Engineering, Russian Academy of Engineering (IAE), and Subramanyan Chandrasekhar Prize of Plasma Physics (AAPPS-DPP), 2017.

Prof. Lee is a well-known space physicist. He has published more than 300 scientific papers as well as three academic monographs. During his career, Prof. Lee developed several new theories to explain observed space phenomena. His major research achievements include: (a) the turbulence spectrum of interstellar medium, (b) the cyclotron maser theory for the generation of auroral kilometric radiation, (c) the multiple X-line reconnection model for magnetic flux transfer events, (d) the formation mechanism of solar prominences, (e) a new mechanism for solar coronal heating, and (f) the discovery of "gigantic jets" in the Earth’s upper atmosphere.