

KEN-ICHI NISHIKAWA

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Nationality US citizen

Education

1981 Ph. D., Nagoya University, (Physics)
1975 M. S., Nagoya University, (Physics)
1973 B. S., Nagoya University, (Physics)

Professional Experience

1999-Present **Research Assistant Professor**, Department of Physics and Astronomy,
Rutgers University
1996-1999 **Assistant Professor–Research**, Department of Physics and Astronomy,
Louisiana State University
1995-1996 **Research Scientist**, Department of Space Physics and Astronomy,
Rice University
1990-1995 **Associate Research Scientist**, Department of Physics and Astronomy,
The University of Iowa
1984-1990 **Assistant Research Scientist**, Department of Physics and Astronomy,
The University of Iowa
1982-1984 **Research Physicist I**, Princeton Plasma Physics Laboratory,
Princeton University
1981-1982 **Research Fellow**, Institute of Plasma Physics,
Nagoya University
1980-1981 **Research fellow** supported by Japan Society for the Promotion of Science,
Institute of Plasma Physics, Nagoya University
1979-1980 **Research Fellow**, Division of Thermonuclear Fusion Research,
Japan Atomic Energy Research Institute

Visiting Scientist

Nov. 2000 Max-Plank-Institut für Aeronomie
Sept. 2000 CETP, Paris, France
May 2000 CETP, Paris, France
Jan. 1997-March 1997 The University of Tsukuba, Japan
Sept. 1996-Oct. 1996 Max-Plank-Institut für Extraterrestrische Physik Berlin, Germany
Jan. 1995-March 1995 Max-Plank-Institut für Extraterrestrische Physik Berlin, Germany
March 1990-June 1990 Max-Plank-Institut Für Extraterrestrische Physik Garching, Germany

KEN-ICHI NISHIKAWA (cont'd.)

Page 2

Teaching Experience

April 1981-March 1982 Teaching Assistant, Chubu University, Nagoya

Professional Membership

American Geophysical Union
American Physical Society
American Astronomical Society
Physical Society of Japan
National Union Radio Science
Committee on Space Research (COSPAR)
International Astronomical Union

Recent Professional Activities

Peer Review Panel, National Aeronautics and Space Administration, 1993.

Referee, Journals: Journal of Geophysical Research

Geophysical Research Letters

Physics of Plasmas

Solar Physics

Astrophysical Journal

Offices: National Aeronautics and Space Administration

National Science Foundation

Advised Students

Graduate students

1. J. Zhao for Ph.D. March, 1997, Lucent Technology (with Professor Jun-ichi Sakai)
“Coalescence of Two Parallel Current Loops in a Nonrelativistic Electron-Positron Plasma”
2. T. Kitanishi for Ph.D. March, 1997, Electric Co. (with Professor Jun-ichi Sakai)
“The Dynamics of Electron-Positron Plasma Cloud moving across a Magnetic Field”
3. J. Wang, “Simulations of Galaxy Dynamics” (with Professor David Merritt)

Undergraduate students

1. T. P. Van Vliet for Honor Program April 2001, “Jet Generation from Black Holes”
2. S. Crew for Honor Program, “Particle Simulation Studies of Reconnection”

Archival Publications (Ken-Ichi Nishikawa) (as of July 1, 2001)

1. Nishikawa, K.-I. and H. Nakano, A continuous Ising model exhibiting phase transition of first or second order, *Prog. Theor. Phys.*, *56*, 773, 1976.
2. Hatori, T., K.-I. Nishikawa, Y. Terashima, T. Dodo, and O. Okada, Non-linear transport due to collisional drift waves and interpretation of related experiments, *Plasma Physics and Controlled Nuclear Fusion Research*, IAEA Vienna, Vol. 2, p. 345, 1977.
3. Nishikawa, K.-I., T. Hatori, and Y. Terashima, Nonlinear heat and particle transport due to collisional drift waves, *Phys. Fluids*, *21*, 1127, 1978.
4. Nishikawa, K.-I., T. Hatori, and Y. Terashima, Numerical analysis of nonlinear collisional drift instability, *J. Phys. Soc. Jpn.*, *45*, 998, 1978.
5. Nishikawa, K.-I., Numerical analysis of current-driven collisional drift instability in a sheared magnetic field, *J. Phys. Soc. Jpn.*, *46*, 357, 1979.
6. Nishikawa, K.-I. and Y. Terashima, Numerical study on drift-Alfvén mode in a current-carrying plasma with sheared magnetic field, *International Conference on Plasma Physics*, Nagoya, p. 257, 1980.
7. Nishikawa, K.-I., Numerical study of current-driven collisional drift and Alfvén instabilities in a sheared magnetic field, *J. Phys. Soc. Jpn.*, *48*, 2104, 1980.
8. Nishikawa, K.-I., K. Itoh, T. Tuda, and Y. Terashima, Numerical study on drift and Alfvén waves in a current-carrying plasma, *J. Phys. Soc. Jpn.*, *51*, 1606, 1982.
9. Sakai, J., K.-I. Nishikawa, and Y. Terashima, Collisional tearing and twisting modes in a current sheet with a normal magnetic field and its application to the sudden disappearance of eruptive prominences, *International Conference on Plasma Physics*, Göteborg, p. 54, 1982.
10. Nishikawa, K.-I. and J. Sakai, Stabilizing effect of a normal magnetic field on the collisional tearing mode, *Phys. Fluids*, *25*, 1384, 1982.
11. Nishikawa, K.-I., H. Okuda, and A. Hasegawa, Heating of heavy ions on auroral field lines, *Geophys. Res. Lett.*, *10*, 553, 1983.
12. Sakai, J. and K.-I. Nishikawa, A model of ‘disparitions brusques’ (sudden disappearance of eruptive prominences) as an instability driven by MHD-waves, *Solar Phys.*, *88*, 241, 1983.
13. Okuda, H. and K.-I. Nishikawa, Ion-beam-driven electrostatic hydrogen cyclotron waves on auroral field lines, *J. Geophys. Res.*, *89*, 1023, 1984.
14. Nishikawa, K.-I., H. Okuda, and A. Hasegawa, Heating of heavy ions on auroral field lines in the presence of a large amplitude hydrogen cyclotron wave, *J. Geophys. Res.*, *90*, 419, 1985.
15. Nishikawa, K.-I. and H. Okuda, Heating of light ions in the presence of a large amplitude heavy ion cyclotron wave, *J. Geophys. Res.*, *90*, 2921, 1985.
16. Nishikawa, K.-I. and H. Okuda, Heating of light ions in the presence of a large amplitude heavy ion cyclotron wave, in *Ion Acceleration in the Magnetosphere and Ionosphere*, *Geophys. Monogr. Ser.*, vol. 38, edited by T. Chang, AGU, Washington D.C., 1986.

17. Nishikawa, K.-I., L. A. Frank, T. E. Eastman, and C. Y. Huang, Simulation of electrostatic turbulence in the plasma sheet boundary layer with electron currents and ion beams, *Magnetotail Physics*, ed. by A. T. Y. Lui, Johns Hopkins University Press, p. 313, 1987.
18. Nishikawa, K.-I., L. A. Frank, and C. Y. Huang, Simulation of electrostatic turbulence in the plasma sheet boundary layer with electron currents and bean-shaped ion beams, *J. Geophys. Res.*, *93*, 5929, 1988.
19. Nishikawa, K.-I., G. Ganguli, Y. C. Lee, and P. J. Palmadesso, Simulation of electrostatic modes in a magnetoplasma with transverse inhomogeneous electric field, *Phys. Fluids*, *31*, 1568, 1988.
20. Cairns, I. H. and K.-I. Nishikawa, Simulation relevant to the beam instability in the foreshock, *J. Geophys. Res.*, *94*, 79, 1989.
21. Nishikawa, K.-I., L. A. Frank, and C. Y. Huang, Three-dimensional simulation of whistler modes excited by the Spacelab 2 electron beam, *J. Geophys. Res.*, *94*, 6855, 1989.
22. Nishikawa, K.-I., G. Ganguli, Y. C. Lee, and P. J. Palmadesso, Simulation of electrostatic ion instabilities in the presence of parallel currents and transverse electric fields, *Physics of Space Plasma (1988)*, *SPI Conference Proceedings and Reprints Series, Number 8*, T. Chang, G. B. Crew, and J. R. Jasperse, eds., Scientific Publishers, Inc., Cambridge, MA, 1989, p. 405; also in *Proceedings of an International School and Workshop on Plasma Astrophysics*, esa SP-285 (Vol. 1) p. 385, esa, Paris, France, 1989.
23. Nishikawa, K.-I., G. Ganguli, Y. C. Lee, and P. J. Palmadesso, Simulation of electrostatic turbulence due to sheared flows parallel and transverse to the magnetic field, *J. Geophys. Res.*, *95*, 1029, 1990.
24. Goertz, C. K., T. Whelan, and K.-I. Nishikawa, A new numerical code for simulating current driven instabilities on auroral field lines, *J. Geophys. Res.*, *96*, 9579, 1991.
25. Nishikawa, K.-I. and I. H. Cairns, Simulation of the nonlinear evolution of electron plasma waves, *J. Geophys. Res.*, *96*, 19,343, 1991.
26. Neubert, T., R. H. Miller, O. Buneman, and K.-I. Nishikawa, The dynamics of low- β plasma cloud as simulated by a 3-dimensional electromagnetic particle code, *J. Geophys. Res.*, *97*, 12,057, 1992.
27. Buneman, O., T. Neubert and K.-I. Nishikawa, Solar wind-magnetosphere interaction as simulated by a 3D EM particle code, *IEEE Trans. Plasma Sci.*, *20*, 810, 1992.
28. Zhao, J., K.-I. Nishikawa, J.-I. Sakai, and T. Neubert, Study of non-linear Alfvén waves in an electron-positron plasma with 3-D EM particle code, *Phys. Plasmas*, *1*, 103, 1994.
29. Moghaddam-Taaheri, E., G. Lu, C. K. Goertz, and K.-I. Nishikawa, Study of the CIV effect in finite size clouds by particle-in-cell simulation, *J. Geophys. Res.*, *99*, 6393, 1994.
30. Nishikawa, K.-I., O. Buneman, and T. Neubert, New aspects of whistler waves driven by an electron beam as studied by a 3-D electromagnetic particle code, *Geophys. Res. Lett.*, *21*, 1019, 1994; also in *Adv. Space Res.* *15*, (12)17, 1995.

31. Dum, C. T. and K.-I. Nishikawa, Two-dimensional simulation studies of the electron beam-plasma instability, *Phys. Plasmas*, 1, 1821, 1994.
32. Sakai, J.-I., J. Zhao, and K.-I. Nishikawa, Loop heating by DC electric current and electromagnetic wave emission simulated by 3-D EM particle code, *Solar Phys.*, 154, 97, 1994.
33. Nishikawa, K.-I., J.-I. Sakai, J. Zhao, T. Neubert, and O. Buneman, Coalescence of two current loops with kink instability simulated by 3-D EM particle code, *Astrophys. J.*, 434, 363, 1994; also in *Adv. Space Res.* 17, (4/5)125, 1995.
34. Zhao, J., J.I. Sakai, K.-I. Nishikawa, and T. Neubert, Relativistic particle acceleration in an electron-positron plasma with a relativistic electron beam, *Phys. Plasmas*, 1, 4114, 1994.
35. Buneman, O., K.-I. Nishikawa, and T. Neubert, Solar wind-magnetosphere interaction as simulated by a 3D EM particle code, in *Space Plasmas: Coupling Between Small and Medium Scale Processes*, *Geophys. Monogr. Ser.*, vol. 86, edited by M. Ashour-Abdalla, T. Chang, and P. Dusenbery, p. 347, AGU, Washington D.C., 1995.
36. Sakai, J. I., T. Fushiki, and K.-I. Nishikawa, A model of solar flares triggered by interactions between force-free current loops and plasmoids, *Solar Phys.*, 158, 301, 1995.
37. Zhao, J., J. I. Sakai, and K.-I. Nishikawa, Particle simulation of collision between a plasma cloud and a current loop, *Astrophys. J.*, 449, L161, 1995.
38. Koide, S. and K.-I. Nishikawa, Alpha effect and hydrodynamical helicity of anisotropic turbulence in reversed field pinch, *J. Phys. Soc. Jpn.*, 64, 4684, 1995.
39. Nishikawa, K.-I., O. Buneman, and T. Neubert, Solar Wind-Magnetosphere Interaction as Simulated by a 3-D EM Particle Code, *Astrophys. Space Sci.*, 227, 265, 1995; also in *Plasma Astrophysics and Cosmology*, edited by A. T. Peratt, Kluwer Academic Pub., p. 265, 1995; Nishikawa, K.-I. and T. Neubert, Solar Wind-Magnetosphere Interaction as Simulated by a 3-D EM Particle Code: A 3-D Reconnection at the Magnetopause, *Adv. Space Res.* 18, (8)263, 1996.
40. Zhao, J., J. I. Sakai, and K.-I. Nishikawa, Coalescence of two parallel current loops in a non-relativistic electron-positron plasma, *Phys. Plasmas*, 3, 844, 1996.
41. Koide, S., K.-I. Nishikawa, and R. L. Mutel, A two-dimensional Simulation of relativistic magnetized jet, *Astrophys. J.*, 463, L71, 1996.
42. Koide, S. J. I. Sakai, K.-I. Nishikawa, and R. L. Mutel, Numerical simulation of bent jets: Propagation into an oblique magnetic field, *Astrophys. J.*, 464, 724, 1996; also in *Energy transport in radio galaxies and quasars*, edited by P. E. Hardee, A. H. Bridle, & J. A. Zensus, p. 371, 1996.
43. Kitanishi, T., J. Zhao, J. I. Sakai, and K.-I. Nishikawa, Electromagnetic waves emitted from an electron-positron plasma cloud moving across a magnetic field, *Phys. Rev. E*, 53, 6376, 1996.
44. Zhao, J., J. I. Sakai, and K.-I. Nishikawa, Excitation of whistler waves driven by an electron temperature anisotropy, *Solar Phys.*, 168, 345, 1996.

45. Nishikawa, K.-I., J. Zhao, J.-I. Sakai, and T. Neubert, Study of nonlinear Alfvén waves in an electron-positron plasma with a 3-D EM particle code, *Adv. Space Res.*, *19*, (1)117, 1997.
46. Nishikawa, K.-I., S. Koide, J.-I. Sakai, D. M. Christodoulou, H. Sol, and R. L. Mutel, Three-dimensional magnetohydrodynamic simulations of relativistic jets injected along a magnetic field, *Astrophys. J.*, *483*, L45, 1997.
47. Nishikawa, K.-I., Particle entry into the magnetosphere with a southward IMF as simulated by a 3-D EM particle code, *J. Geophys. Res.*, *102*, 17,631, 1997.
48. Nishikawa, K.-I., Reconnections at near-Earth magnetotail and substorms studied by a 3-D EM particle code, in *Geospace Mass and Energy Flow: Results From the International Solar-Terrestrial Physics Program*, *Geophys. Monogr. Ser.*, vol. 104, edited by J. L. Horwitz, W. K. Peterson, and D. L. Gallagher, p. 175, AGU, Washington D.C., 1998.
49. Nishikawa, K.-I., S. Koide, J.-I. Sakai, D. M. Christodoulou, H. Sol, and R. L. Mutel, Three-dimensional magnetohydrodynamic simulations of relativistic jets injected oblique to a magnetic field, *Astrophys. J.*, *498*, 166, 1998.
50. Nishikawa, K.-I., Particle entry through reconnection grooves in the magnetopause with a dawnward IMF as simulated by a 3-D EM particle code, *Geophys. Res. Lett.*, *25*, 1609, 1998; Nishikawa, K.-I., and S. Ohtani, Particle entry through reconnection by a time-varying IMF as simulated by a 3-D EM particle code, in *Substorms-4*, ed. S. Kokubun and Y. Kamide, Kluwer Academic Pub, Dordrecht, p. 535, 1998.
51. Nishikawa, K.-I., J. Frank, D. M. Christodoulou, S. Koide, J.-I. Sakai, H. Sol, and R. L. Mutel, Dynamics of relativistic jets, *New Astron. Rev.*, *42*, 653, 1998.
52. Nishikawa, K.-I., and S. Ohtani, Evolution of thin current sheet with a southward IMF studied by a 3-D EM particle code, *J. Geophys. Res.*, *105*, 13,017, 2000.
53. Nishikawa, K.-I., and S. Ohtani, Global Particle Simulation for a Space Weather Model: Present and Future, *IEEE Trans. Plasma Sci.*, *28*, 1991, 2000.
54. Nishikawa, K.-I., Global particle simulation study of substorm onset and particle acceleration, *Space Sci. Rev.*, *95*, 361, 2001.
55. Cai, D.-S., Y. Li, T. Ichikawa, C. Xiao, and K.-I. Nishikawa, Visualization and criticality of three-dimensional magnetic field topology in the magnetotail, *Earth Planets Space*, in press, 2001.