

CYNTHIA A. CATTELL

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Education:

B.A. Physics and Geophysics, Hampshire College, Amherst, MA , 1974
Ph.D., Physics, University of California, Berkeley, CA , 1980

Career Summary:

2010- 2014 Associate Head, School of Physics and Astronomy
2000-present Professor of Physics, University of Minnesota
1994-2000 Associate Professor of Physics, University of Minnesota
1989-1994 Senior Fellow, Space Sciences Laboratory, Univ. of California, Berkeley
1980-1994 Ass./Assoc. Research Physicist, SSL, UCB

Awards:

NSF Career Enhancement Award, 1995
Cottrell Scholar, 1997
Fellow, American Geophysical Union, 2008
Fellow, American Physical Society, 2010
University of Minnesota CSE Taylor Award for Distinguished Service, 2011
Mullen-Spector-Truax Women's Leadership Award. 2014
APS PhysTEC, 5+ Club, 2011, 2012
College of Science and Engineering Distinguished Professor

Publications

1. "Observations of differences between regions of current flowing into and out of the ionosphere," C. A. Cattell, R. L. Lysak, R. B. Torbert and F. S. Mozer, *Geophys. Res. Lett.* **6**, 621 (1979).

2. "The dc and ac electric field, plasma density, plasma temperature, and field-aligned current measurements on the S3-3 satellite," F. S. Mozer, C. A. Cattell, M. Temerin, R. B. Torbert, S. Von Glinski, M. Woldorff and J. Wygant, *J. Geophys. Res.* **84**, 5875 (1979).
3. "Simultaneous observations of energetic (keV) upstreaming and electrostatic hydrogen cyclotron waves," P. M. Kintner, M. C. Kelley, R. D. Sharp, A. G. Ghielmetti, M. Temerin, C. Cattell, P. Mizera and J. F. Fennell, *J. Geophys. Res.* **84**, 7201 (1979).
4. "Satellite measurements and theories of low altitude auroral particle acceleration," F. S. Mozer, C. A. Cattell, M. K. Hudson, R. L. Lysak, M. Temerin and R. B. Torbert, *Space Sci. Rev.* **27**, 155 (1980).
5. "The aurora inferred from S3-3 particles and fields," P. F. Mizera, J. F. Fennell, D. R. Croley, Jr., A. L. Vampola, F. S. Mozer, R. B. Torbert, M. Temerin, R. Lysak, M. Hudson, C. Cattell, R. J. Johnson, R. D. Sharp, A. Ghielmetti and P. M. Kintner, *J. Geophys. Res.* **86**, 2329 (1981).
5. "The relationship of field-aligned currents to electrostatic ion cyclotron waves," C. A. Cattell, *J. Geophys. Res.* **86**, 3641 (1981).
7. "Simultaneous observations of auroral zone electrodynamics by two satellites: Evidence for height variations in the topside ionosphere," F. J. Rich, M. C. Kelley, W. J. Burke and C. A. Cattell, *J. Geophys. Res.* **86**, 8929 (1981).
8. "The small-scale structure of electrostatic shocks," M. Temerin, C. Cattell, R. Lysak, M. Hudson, R. Torbert, F. Mozer, R. Sharp and P. Kintner, *J. Geophys. Res.* **86**, 11278 (1981).
9. "Observations of electrostatic shocks and associated plasma instabilities by the S3-3 satellite," C. A. Cattell, M. K. Hudson, R. L. Lysak, R. B. Torbert, D. W. Potter, M. Temerin and F. S. Mozer, in *Relation between Laboratory and Space Plasmas*, ed. by H. Kikuchi, p. 115, D. Reidel, Dordrecht, Holland (1981).
10. "The boundary of the polar cap and its relation to electric fields, field-aligned currents, and auroral particle precipitation," R. B. Torbert, C. A. Cattell, F. S. Mozer and C.-I. Meng, in *Physics of Auroral Arc Formation*, Geophys. Monograph **25**, edited by S-I. Akasofu and J. R. Kan, p. 143, American Geophysical Union, Washington, D. C. (1981).
11. "S3-3 satellite instrumentation and data," C. A. Cattell, in *The IMS Source Book*, edited by C. T. Russell and D. J. Southwood, p. 91, American Geophysical Union, Washington, D. C. (1982).
12. "Observations of large electric fields near the plasmashet boundary by ISEE-1," C. A. Cattell, M. Kim, R. P. Lin and F. S. Mozer, *Geophys. Res. Lett.* **9**, 539 (1982).
13. "Flute mode waves near ω_{LH} excited by heated ion rings in velocity space," C. A. Cattell and M. K. Hudson, *Geophys. Res. Lett.* **9**, 1167 (1982).
14. "Electric fields measured by ISEE-1 within and near the neutral sheet during quiet and active times," C. A. Cattell and F. S. Mozer, *Geophys. Res. Lett.* **9**, 1041 (1982).

15. "Evidence for electrostatic shocks as the source of discrete auroral arcs," C. Kletzing, C. A. Cattell, F. S. Mozer, S.-I. Akasofu and K. Makita, *J. Geophys. Res.* **88**, 4105 (1983).
16. "Electric field evidence for tailward flow at substorm onset," A. Nishida, Y. K. Tulunay, F. S. Mozer, C. A. Cattell, E. W. Hones, Jr. and J. Birn, *J. Geophys. Res.* **88**, 9109 (1983).
17. "Association of field-aligned currents with small-scale auroral phenomena," C. A. Cattell, in *Magnetospheric Currents*, Geophys. Monograph **28**, ed. by T. A. Potemra, p. 304, American Geophysical Union, Washington, D.C. (1983).
18. "Substorm electric fields in the Earth's magnetotail," C. A. Cattell and F. S. Mozer, in *Magnetic Reconnection in Space and Laboratory Plasmas*, Geophys. Monograph **30**, ed. by E. W. Hones, Jr., p. 208, American Geophysical Union, Washington, D.C. (1984).
19. "Quasistatic electric field measurements with spherical double probes on the GEOS and ISEE satellites," A. Pedersen, C. A. Cattell, C.-G. Falthammar, V. Formisano, P.-A. Lindqvist, F. S. Mozer and R. B. Torbert, *Space Sci. Rev.* **37**, 269 (1984).
20. "Satellite borne electric field measurements with spherical double probes," C.-G. Falthammar, P.-A. Lindqvist, C. A. Cattell, F. S. Mozer, V. Formisano and A. Pedersen, in *Proc. Conf. Achievements of the IMS*, 26-28 June 1984, Graz, Austria, **ESA SP-217** p. 125, European Space Agency, Paris (1984).
21. "Electric fields in the plasmashet and plasma sheet boundary layer," A. Pedersen, C. A. Cattell, C.-G. Falthammar, K. Knott, P.-A. Lindqvist, R. H. Manka and F. S. Mozer, in *Proc. Conf. Achievements of the IMS*, 26-28 June 1984, Graz, Austria, **ESA SP-217** p. 147, European Space Agency, Paris (1984).
22. "Electric fields in the plasma sheet and plasma sheet boundary layer," A. Pedersen, C. A. Cattell, C.-G. Falthammar, K. Knott, P.-A. Lindqvist, R. H. Manka and F. S. Mozer, *J. Geophys. Res.* **90**, 1231 (1985).
23. "Multisatellite investigations of substorm onsets," W. J. Hughes, D. P. Smits, C. A. Cattell and C. T. Russell, *Adv. Space Res.* **5**, 159 (1985).
24. "Large electric fields in the magnetosphere," F. S. Mozer, M. H. Boehm, C. A. Cattell, M. Temerin and J. R. Wygant, in *Space Plasma Simulations: Proc. of Second Int'l. School for Space Simulations*, Kapaa, Hawaii, February 4-15, 1985 (reprinted from *Space Sci. Rev.* **42**, nos. 1-4, 1985), ed. by M. Ashour-Abdalla and D. Dutton, p. 313, D. Reidel Publ. Co., Dordrecht, Holland (1985).
25. "Electric fields and convection velocities associated with flux transfer events," R. Dailey, C. A. Cattell, F. S. Mozer and J. Berchem, *Geophys. Res. Lett.* **12**, 843 (1985).
26. "Observations of field-aligned currents, waves and electric fields at substorm onset," D. P. Smits, W. J. Hughes, C. A. Cattell and C. T. Russell, *J. Geophys. Res.* **91**, 121 (1986).

27. "Experimental determination of the dominant wave mode in the active near-Earth magnetotail," C. A. Cattell and F. S. Mozer, *Geophys. Res. Lett.* **13**, 221 (1986).
28. "ISEE observations of the plasma sheet boundary, plasmashet, and neutral sheet: (1) Electric field, magnetic field, plasma, and ion composition," C. A. Cattell, F. S. Mozer, E. W. Hones, Jr., R. R. Anderson and R. D. Sharp, *J. Geophys. Res.* **91**, 5663 (1986).
29. "ISEE observations of the plasmashet boundary, plasmashet, and neutral sheet: (2) Waves," C. A. Cattell, F. S. Mozer, R. R. Anderson, E. W. Hones, Jr. and R. D. Sharp, *J. Geophys. Res.* **91**, 5681 (1986).
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32. "Substorm-associated lower hybrid waves in the plasmashet observed by ISEE-1," C. A. Cattell and F. S. Mozer, in *Magnetotail Physics*, ed. by A. T. Y. Lui, p. 119, Johns Hopkins Univ. Press, Baltimore (1987).
33. "Micro-physics of the auroral acceleration region and of other regions of the magnetosphere," F. S. Mozer, C. A. Cattell, M. Temerin and J. R. Wygant, in *Proc. 21st ESLAB Symp. on Small-Scale Plasma Processes*, Bolkesjø, Norway, **ESA SP-275**, ed. by B. Battrock, p. 65, European Space Agency, Paris (1987).
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37. "Average plasma properties in the central plasma sheet," W. Baumjohann, G. Paschmann and C. A. Cattell, *J. Geophys. Res.* **94**, 6597 (1989).
38. "Non-substorm transient injection events in the ionosphere and magnetosphere," V. A. Sergeev, O. A. Aulamo, R. J. Pellinen, M. K. Vallinkoski, T. Bøisinger, C. A. Cattell, R. C. Elphic and D. J. Williams, *Planet. Space Sci.*, **38**, 231 (1990).

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41. "On the search for evidence of fast mode compressions in the near-Earth tail: ISEE observations," K. T. Moortgat, C. A. Cattell, F. S. Mozer and R. C. Elphic, *J. Geophys. Res.* **95**, 18,887 (1990).
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44. "An S3-3 satellite study of the effects of the solar cycle on the auroral acceleration process," C. A. Cattell, S. Chari and M. A. Temerin, *J. Geophys. Res.* **96**, 17,903 (1991).
45. "The MHD structure of the plasma sheet boundary: (1) Tangential momentum balance and consistency with slow mode shocks," C. A. Cattell, C. W. Carlson, W. Baumjohann and H. Lühr, *Geophys. Res. Lett.* **19**, 2083 (1992).
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48. "Effects of solar cycle on auroral particle acceleration," C.A. Cattell, T. Nguyen, M. Temerin, W. Lennartsson, W. Peterson, in *Auroral Plasma Dynamics*, Geophys. 219 (1993).
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50. "A search for upstream pressure pulses associated with flux transfer events: An AMPTE/ISEE case study," R.C. Elphic, W. Baumjohann, C.A. Cattell, H. Lühr, and M.F. Smith, *J. Geophys. Res.* **99**, 13521 (1994).

51. "Geotail observations of spiky electric fields and low frequency waves in the plasma sheet and plasma sheet boundary," C. Cattell, F. Mozer, K. Tsuruda, H. Hayakawa, N. Nakamura, T. Okada, S. Kokubun and T. Yamamoto, *Geophys. Res. Lett.* **21**, 2987 (1994).
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53. "Modeling mesoscale processes in the global geospace system," M.K. Hudson, W. Lotko, C.A. Cattell, R. Lysak, I. Roth and M. Temerin, in *The Global Geospace Mission, Space Sci. Reviews*, **71**, 623 (1995).
54. "ISEE-1 and Geotail observations of low frequency waves at the magnetopause," C. Cattell, J. Wygant, F. Mozer, T. Okada, S. Kokubun and T. Yamamoto, *J. Geophys. Res.* **100**, 11823 (1995).
55. "The effects of low frequency waves on ion trajectories in the earth's magnetotail," C. Cattell, M. Linton and I. Roth, *Geophys. Res. Lett.*, **22**, 3445 (1995).
56. "GEM tests of a boundary layer model of field-aligned currents using S3-3 data," C. Cattell, M. Somoza, G. Siscoe, and J. Roeder, *J. Geophys. Res.*, **101**, 4953 (1996).
57. C. "Detection of localized plasma depleted flux tubes (bubbles) in the midtail plasma sheet," V. Sergeev, V. Angelopoulos, J. Gosling, C. Cattell, C. Russell, *J. Geophys. Res.*, **101**, 10817 (1996).
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66. "FAST observations in the downward auroral current region: Energetic up-going electron beams, parallel electric fields, and ion heating," Carlson, C. et al., *Geophys. Res. Lett.*, **25**, 2017, 1998.
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68. Electron modulation and ion cyclotron waves observed by FAST, McFadden, J. et al., *Geophys. Res. Lett.*, **25**, 2045, 1998.
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G. T. Delory, C. C. Chaston, M. Temerin, C. A. Cattell, E. Moebius, L. M. Kistler, D. M. Klumpar, W. K. Peterson, E. G. Shelley, R. F. Pfaff, *Geophys. Res. Lett.*, **25**, 2065, 1998.

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