

Col William Lotko

CISM Project Role: Magnetosphere-Ionosphere Coupling

Institution: Dartmouth College

Education:

Ph.D. Plasma Physics, University of California, Los Angeles, 1981

M.Sc. Condensed Matter Physics, University of Missouri, Kansas City, 1976

B.Sc. Engineering Physics, University of Kansas, 1973

Professional Background:

1995- Professor of Engineering, Dartmouth College

1984-95 Asst/Assoc Professor of Engineering, Dartmouth College

1981-84 Asst/Assoc Research Physicist, Space Sciences Laboratory, UCB

1973-75 Electrical Engineer, Libby Power Systems, Kansas City, MO



Relevant Experience:

Twenty-five years research and publication in theory, modeling, numerical simulation and data analysis of auroral, magnetospheric, and magnetosphere-ionosphere coupling processes, boundary and internal resonance layers, ultra-low-frequency and nonlinear waves, microphysics, wave-particle interactions, particle energization and transport, turbulence, kinetic and MHD theory. • Associate Editor for *Journal of Geophysical Research*, *Space Physics* (1990-92) and *Geophysical Research Letters* (1992-97); Steering Committee Chair, NSF Geospace Environment Modeling Program (1991-94); Steering Committee Member, NSF Polar Cap Observatory (1992) and New Hampshire Space Grant Consortium (1990-2001); Advisory Committee Member for NSF Space Weather Research Initiative (1993-94); Member, Decadal Survey Panel on Theory, Computation and Data Exploration, National Academy Space Studies Board (2001) • *PI, SEC Theory Program*: Ultra-Low-Frequency Magnetospheric Physics: Scale-interactive processes in global dynamics, boundary and internal resonance layers, magnetosphere-ionosphere coupling and particle energization (1999-05); Mesoscale processes at magnetospheric boundaries and their coupling to the ionosphere (1993-99); *PI, Guest Investigator Program*: Multi-scale, multi-instrument study of auroral Alfvénic processes (1999-02); *Co-I, ITM New Mission Concepts*: Study for an Auroral Multi-Probe Satellite mission (1997-99); *Co-I, ISTP Theory*: A theoretical study of the global geospace system (1991-2001); *Co-I, ITM Theory/Modeling Study*: Impacts of ionospheric activity on ULF auroral electrodynamics (2001-04); *Co-I, NSF Science and Technology Center*: Center for Integrated Space Weather Modeling (2002-07)

Relevant Publications:

- Streltsov, A.V. and W. Lotko, Multiscale electrodynamics of the ionosphere-magnetosphere system, *J. Geophys. Res.*, 109, A09214, doi: 10.1029/2004JA010457, 2004
- Lotko, W. Inductive magnetosphere-ionosphere coupling, *J. Atmos. Sol. Terr. Phys.*, 66, 1443–1456, doi:10.1016/j.jastp.2004.03.027, 2004
- Lotko, W., M. Lessard, C.W. Carlson, R.C. Elphic, F.R. Fenrich and W. Peria, Collisionless dissipation in a field line resonance, *J. Geophys. Res.*, submitted, 2002
- Lotko, W. (contributing author), *Auroral Plasma Physics*, ed. by Paschmann, G., S. Haaland and R. Treumann, Kluwer Academic Publishers, Boston/Dordrecht/London, 2003
- Streltsov, A.V., and W. Lotko, Small-scale electric fields in downward auroral current channels, *J. Geophys. Res.*, 108(A7), 1289, doi:10.1029/2002JA009806, 2003
- Streltsov, A.V. and W. Lotko, Reflection and absorption of Alfvénic power in the low-altitude magnetosphere, *J. Geophys. Res.*, 108(A4), 10.1029/2002JA009425, 2003
- Pokhotelov, D., W. Lotko, and A.V. Streltsov, Effects of the seasonal asymmetry in ionospheric Pedersen conductance on the appearance of discrete aurora, *Geophys. Res. Lett.*, 29(10), 1437, doi:10.1029/2001GL014010, 2002
- Pokhotelov, D., W. Lotko, and A.V. Streltsov, Harmonic structure of field line eigenmodes generated by ionospheric feedback instability, *J. Geophys. Res.*, 107(A11), 1363, doi:10.1029/2001JA000134, 2002
- Lotko, W., A.V. Streltsov, C.W. Carlson, Discrete auroral arc, electrostatic shock, and suprathermal electrons powered by dispersive, anomalously resistive field line resonance, *Geophys. Res. Lett.* 25, 4449, 1998
- Lotko, W. and A.V. Streltsov, Magnetospheric resonance, auroral structure, and multipoint measurements, *Adv. Space Res.* 20, 1067, 1997