Lynn Marie Carter

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Education:

2005	Ph.D. – Cornell University, Astronomy Advisor: Professor Donald B. Campbell Thesis: "Investigating Mantling Deposits on Venus and Regoliths on Asteroids Using Radar Polarimetry"
2002	M.S. – Cornell University, Astronomy
1999	B.S. – University of Illinois, Astronomy and Physics (Magna Cum Laude, with Honors)

Research Experience:

2004-present	*Postdoctoral Research Associate* Smithsonian Institution Center for Earth and Planetary Studies Geology of Moon, Mars and Venus, surface properties of asteroids and icy moons
1999-2004	*Graduate Research Assistant* Cornell University Astronomy Department Surface properties of Venus, radar observations, scattering models
1998	*Research Experience for Undergraduates Summer Internship* National Optical Astronomy Observatory, Tucson Comparing thermal models of comet Halley with observations
1997	*Research Experience for Undergraduates Summer Internship* Cornell University Astronomy Department Thermal infrared spectroscopy of Mars
1996-1999	*Undergraduate Research Assistant* University of Illinois Astronomy Department Supernova remnants, synthesis imaging

Teaching and Outreach Experience:

2005-present	Activity leader for National Air and Space Museum public programs (Space Day, Mars Day)
2005-present	Presenter of public "Curator's Choice" museum talks about research and artifacts
1999-2004	Designer and participant for the Cornell University Ask an Astronomer website (http://curious.astro.cornell.edu/)
2002-2004	Workshop Leader for Expanding Your Horizons program for middle school girls
2001-2004	Workshop Leader for Focus for Teens 4H career camp for high school students
2002	Teaching Assistant, Cornell University, Astronomy 102: Our Solar System
2002	Certificate of Merit, Cornell Teaching Development Workshop
2000-2002	Essay grader for writing course, Cornell University, Astro. 280: Spacecraft Exploration
1999	Teaching Assistant, University of Illinois, Astro. 121: The Solar System

Funded Projects and Mission Involvement:

2009-2010	SHARAD Science Team Member, Mars Reconnaissance Orbiter
2009-2012	Co-Investigator, "Scientific and Exploration Potential of the Lunar Poles", PI: B. Bussey, NASA Lunar Science Institute (NLSI)
2009-2010	Co-Investigator, "Volcanic Studies through EVA Simulations", PI: W. B. Garry, Moon and Mars Analog Mission Activities (MMAMA)
2008-2011	Principle Investigator, "Radar Polarimetric Studies of the Lunar Poles and Lunar Pyroclastic Deposits", NASA Lunar Reconnaissance Orbiter Participating Scientist Program (LROPS)
2007-2009	Principle Investigator, "Physical Properties of Titan's Surface from Modeling of Cassini Radar Data", NASA Cassini Data Analysis Program (CDAP)
2006-2009	Principle Investigator, "Radar Sounding of Volcanic Terrains on Mars", NASA Mars Reconnaissance Orbiter Participating Scientist Program (MROPS)
2006-2008	Principle Investigator, "Searching for Regolith on Asteroids Using Radar Polarimetry", NASA Planetary Astronomy Program (PASP)

Fellowships and Awards:

2006	NASA Fellowship for Early Career Researchers in Planetary Science
2003	Eleanor Norton York Prize (for department service), Cornell University
1999-2003	National Science Foundation Graduate Research Fellowship
1999	Cornell University Graduate Fellowship
1998-1999	Barry M. Goldwater Excellence in Education Scholarship

Invited Talks

Nov. 2, 2009	Colloquium, Department of Earth and Planetary Sciences, Harvard University, Cambridge, MA
Feb. 17, 2009	Colloquium, Department of Earth and Planetary Sciences, Washington University, St. Louis, MO
Oct. 27, 2007	Public Lecture, Staerkel Planetarium, Champaign, IL
Aug.18, 2006	Science Lunch Seminar, Naval Research Laboratory, Washington, DC
Sep. 16, 2004	Colloquium, Department of Astronomy, Cornell University, Ithaca, NY

Professional Organizations and Activities:

2009-present	Arecibo Observatory Users and Scientific Advisory Committee
2006-present	NASA Review Panel Member and External Reviewer (MDAP, PG&G, CDAP, PASP, PIDDP)
2007	Scientific Organizing Committee for Frontiers of Astronomy with the World's Largest Radio Telescope meeting, Washington D.C.
2001-2004	Co-Organizer, Cornell Astronomy Department Planetary Science Seminar Series
2003-present	American Geophysical Union Member
1999-present	American Astronomical Society Member
1999-present	Division for Planetary Sciences Member

Publications

Refereed Papers:

- **Carter, L. M.**, D. B. Campbell & B. A. Campbell, Geologic studies of planetary surfaces using radar polarimetric imaging, submitted to *IEEE Trans. Geosci. Rem. Sens.*, 2010.
- Ghent, R. R., V. Gupta, B.A. Campbell, S. A. Ferguson, J. Brown, R. Fergason & **L. M. Carter**, Generation and atmospheric entrainment of fine-grained ejecta in planetary impacts, submitted to *Icarus*, 2009.
- Campbell, B. A., **L. M. Carter**, D. B. Campbell, M. C. Nolan, J. F. Chandler, R. R. Ghent, B. R. Hawke, R. F. Anderson & K. S. Wells, Earth-Based S-band Radar Mapping of the Moon: New Views of Impact Melt Distribution and Mare Physical Properties, *Icarus*, in press, 2009.
- Wells, K. S., D. B. Campbell, B. A. Campbell, & **L. M. Carter**, Detection of Small Lunar Secondary Craters in Circular Polarization Ratio Radar Images, *J. Geophys. Res*., doi:10.1029/2009JE003491, in press, 2010.
- **Carter, L. M**., B. A. Campbell, J. W. Holt, R. J. Phillips, N. E. Putzig, S. Mattei, R. Seu, & C. H. Okubo, Dielectric Properties of Lava Flows West of Ascraeus Mons, Mars, *Geophys. Res. Lett., 36,* L23204, doi:10.1029/2009GL041234, 2009.
- Campbell, B. A., B. R. Hawke, **L. M. Carter**, R. R. Ghent & D. B. Campbell, Rugged Lava Flows in the Lunar Maria Revealed by Earth-based Radar, *Geophys. Res. Lett., 36,* L22201, doi:10.1029/ 2009GL041087, 2009.
- Putzig, N. E., R. J. Phillips, B. A. Campbell, J. W. Holt, J. J. Plaut, **L. M. Carter**, A. Egan, F. Bernardini, A. Safaeinili, & R. Seu, Subsurface Structure of Planum Boreum from Mars Reconnaissance Orbiter Shallow Radar soundings, *Icarus, 204*, doi:10.1016/j.icarus.2009.07.034, 2009.
- **Carter, L. M.,** B. A. Campbell, B. R. Hawke, D. B. Campbell & M. C. Nolan, Radar Remote Sensing of Pyroclastic Deposits in the Mare Serenitatis and Mare Vaporum Regions of the Moon, *J. Geophys. Res., 114,* E11004, doi:10.1029/2009JE003406, 2009.
- **Carter, L. M.**, B. A. Campbell, T. R. Watters, R. J. Phillips, N. E. Putzig, A. Safaeinili, J. J. Plaut, C. H. Okubo, A. F. Egan, R. Seu, D. Biccari, & R. Orosei, Shallow Radar (SHARAD) Sounding Observations of the Medusae Fossae Formation, Mars, *Icarus, 199*, doi:10.1016/j.icarus.2008.10.007, 2009.
- Campbell, B. A., **L. M. Carter**, R. J. Phillips, N. E. Putzig, J. J. Plaut, A. Safaeinili, R. Seu, D. Biccari & R. Orosei, A. Egan, SHARAD Radar Sounding of Amazonis Planitia, *J. Geophys. Res*., *113,* E12010, doi:10.1029/2008JE003177, 2008.
- Phillips, R. J., M. T. Zuber, S. E. Smrekar, M. T. Mellon, J. W. Head, K. L. Tanaka, N. E. Putzig, S. M. Milkovich, B. A. Campbell, J. J. Plaut, A. Safaeinili, R. Seu, D. Biccari, **L. M. Carter**, G. Picardi, R. Orosei, P. S. Mohit, E. Heggy, R. W. Zurek, A. F. Egan, E. Giacomoni, F. Russo, M. Cutigni, E. Pettinelli, J. W. Holt, C. J. Leuschen, & L. Marinangeli, Mars North Polar Deposits: Stratigraphy, Age, and Geodynamical Response, *Science, 320*, doi:10.1126/science.1157546, 2008.
- Campbell, B. A., **L. M. Carter**, B. R. Hawke, D. B. Campbell & R. R. Ghent, Volcanic and Impact Deposits of the Moon's Aristarchus Plateau: A New View from Earth-Based Radar Images, *Geology*, *36*, 135, 2008.
- Watters, T. R., B. A. Campbell, **L. M. Carter**, C. J. Leuschen, J. J. Plaut, G. Picardi, R. Orosei, A. Safaeinili, S. M. Clifford, W. M. Farrell, A. B. Ivanov, R. J. Phillips, and E. R. Stofan, Radar Sounding of the Medusae Fossae Formation Mars: Equatorial Ice or Dry, Low-Density Deposits?, *Science*, *318*, 1125, 2007.
- Campbell, B. A., D. B. Campbell, J. L. Margot, R. R. Ghent, M. Nolan, J. Chandler, **L. M. Carter** & N. J. S. Stacy, Focused 70-cm Wavelength Radar Mapping of the Moon, *IEEE Trans. Geosci. Rem. Sens.*, *45*, 4032, 2007.
- Black, G. J., D. B. Campbell & **L. M. Carter**, Arecibo radar observations of Rhea, Dione, Tethys, and Enceledus, *Icarus, 191*, 702, 2007.

- Seu, R. and the SHARAD Team, Accumulation and erosion of Mars south polar deposits from subsurface radar sounding, *Science, 317*, 1715, 2007.
- Campbell, B. A., D. B. Campbell, J. L. Margot, R. R. Ghent, M. Nolan, J. Chandler, **L. M. Carter** & N. J. S. Stacy, Looking Below the Moon's Surface with radar, *EOS Trans. AGU*, *88*, 13, 2007.
- Kratter, K. M., **L. M. Carter** & D. B. Campbell. An Expanded View of Lada Terra: New Arecibo Radar Observations of Quetzalpetlatl and Surrounding Flows. *J. Geophys. Res., 112*, E04008, doi:10.1029/2006JE002722, 2007.
- Campbell, D. B., B. A. Campbell, **L. M. Carter**, J. L. Margot & N. J. S. Stacy. No evidence for thick deposits of ice at the lunar poles, *Nature*, *443*, 835, 2006.
- **Carter, L. M**., D. B. Campbell & B. A. Campbell. Volcanic Deposits in Shield Fields and Highland Regions on Venus: Surface Properties from Radar Polarimetry. *J. Geophys. Res.*, *111*, E06005, doi:10.1029/2005JE002519, 2006.
- **Carter, L. M**., D. B. Campbell & B. A. Campbell. Impact Crater Related Surficial Deposits on Venus: Multi-Polarization Radar Observations with Arecibo. *J. Geophys. Res.*, *109,* E06009, doi:10.1029/2003JE002227, 2004.
- Black, G. J, D. B. Campbell, **L. M. Carter** & S. J. Ostro, Radar Detection of Iapetus, *Science, 304*, 553, 2004.
- Campbell, D. B., G. J. Black, **L. M. Carter** & S. J. Ostro. Radar Evidence for Liquid Surfaces on Titan. *Science*, *302*, 431, 2003.
- Dickel, J. R., R. M. Williams, **L. M. Carter**, D. K. Milne, R. Petre & S. W. Amy. Supernova Remnants in the Southwestern Part of the Small Magellanic Cloud. *AJ*, *122*, 849, 2001.
- **Carter, L. M**., J. R. Dickel & D. J. Bowmans. Expansion of the Supernova Remnant RCW 103. *Pub. Astron. Soc. Pacific*, *109*, 990, 1997.

Recent Conference Abstracts:

- **Carter, L. M.,** J. J. Gillis-Davis, D. B. J. Bussey, P. D. Spudis, C. D. Neish, B. J. Thomson, G. W. Patterson, R. K. Raney, and the Mini-RF Science Team, Mini-RF Observations of a Sample of Large Lunar Pyroclastic Deposits, *LPSC 41*, abstract #1563, 2010.
- **Carter, L. M.,** B. A. Campbell, B. R. Hawke, D. B. Campbell, M. C. Nolan, R. F. Anderson, K. S. Wells, Radar Observations of Nearside Lunar Domes,. *41st DPS*, 2009.
- **Carter, L. M.,** B. A. Campbell, J. W. Holt, R. J. Phillips, N. E. Putzig, C. H. Okubo, R. Seu and D. Biccari. SHARAD Observations of Lava Flow Fields West of Ascraeus Mons. *LPSC 40*, Abstract #1954, 2009.
- **Carter, L. M.,** B. A. Campbell, B. R. Hawke, D. B. Campbell & M. C. Nolan, Multi-wavelength studies of lunar pyroclastic deposits, *40th DPS*, #9.03, 2008.
- **Carter, L. M**., B. A. Campbell, T. R. Watters, R. Seu, R. J. Phillips, D. Biccari, J. W. Holt, C. Leuschen, J. J. Plaut, A. Safaeinili, R. Orosei, S. E. Smrekar, N. E. Putzig, A. F. Egan, F. Bernardini & the SHARAD Team, SHARAD Sounding Radar Observations of the Medusae Fossae Formation, Mars, *LPSC 39*, Abstract #1391, 2008.
- **Carter, L. M.,** D. B. Campbell, M. C. Nolan, R. F. Anderson. Radar Polarimetric Studies of Near-Earth Asteroid Surface Properties. *39th DPS*, #20.04, 2007.
- **Carter, L.M.,** B. A. Campbell, T. R. Watters, & the SHARAD Team. SHARAD Observations of the Medusae Fossae Formation, 7th International Conference on Mars, Abstract #3207, 2007.
- **Carter, L. M**., B. A. Campbell, B. R. Hawke & D. B. Campbell. Radar Remote Sensing Studies of Lunar Pyroclastic Deposits, *LPSC 38*, Abstract #1338, 2007.
- **Carter, L. M**., D. B. Campbell, J. L. Margot & B. A. Campbell. Mapping the Topography of Maxwell Montes Using Ground-based Radar Interferometry. *LPSC 37*, abstract 2261, 2006.