

Carlos Martinis

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EDUCATION

Ph.D. in Astronomy, *Boston University, 2006*

M.A. in Astronomy, *Boston University, 2001*

Licenciado in Physics, *Universidad Nacional de Tucumán, Argentina, 1996*

Bachillerato in Physics, *Universidad Nacional de Tucumán, Argentina, 1994*

RESEARCH INTERESTS

Equatorial and low latitude electrodynamics.

Optical and GPS diagnostic of ionospheric irregularities.

Study of ionospheric conjugate processes at low and mid-latitudes using all-sky imagers.

PROFESSIONAL EXPERIENCE

07/12-present: Research Assistant Professor

04/10- 0/12: Senior Research Scientist at Boston University

05/08-03/10: Research Associate at Boston University

05/06-04/08: CEDAR Post-doctoral Fellow at Boston University

07/04-07/06: Student Representative in the NSF CEDAR Steering Committee

09/98-present: Member of the Boston University Imaging Science Team

03/97-03/99 Participant in the CONICET Program: '*Solar variability and global change. Interaction between atmospheric regions*', Universidad Nacional de Tucumán, Argentina

TEACHING EXPERIENCE

* AS 102, The Astronomical Universe, Spring 2013, Astronomy Department, Boston University

* AS 414, Solar and Space Physics, Spring 2011, Astronomy Department, Boston University

* AS 866, Space Physics Journal Club, Spring 2010, Astronomy Department, Boston University

PUBLICATIONS

- **C. Martinis** , P. Zablowksi , J. Wilson , J. Baumgardner , J.L. Aballay , B. Garcia, *A new method to estimate cloud cover fraction over El Leoncito Observatory from an all-sky imager designed for upper atmosphere studies*, PASP, DOI: 10.1086/669255, Vol 124, January 2013.
- J. Baumgardner, J. Wroten, M. Mendillo, **C. Martinis**, C. Barbieri, G. Umbriaco, C. Mitchell, J. Kinrade, M.Materassi, L.Ciraolo, and M.Hairston, *Imaging Space Weather over Europe*, Space Weather, doi: 10.1002/swe.20027, January 2013.
- **C. Martinis**, P. Zablowski, M.Hairston, R. Pfaff, J. Baumgardner, M. Mendillo, *Simultaneous Observations of C/NOFS Data and Related Optical Signatures from Midlatitude Ground-Based All-Sky Imagers*, submitted to Geophys. Res. Lett., 2013.
- **C. Martinis**, D.Hickey, A. Wright, C. Miller, W. Oliver, *Use of incoherent scatter radar data to study the equatorial midnight temperature maximum*, JASTP, under review, 2013
- W. Oliver , **C. Martinis** , D. Hickey, A. Wright , C. Amory-Mazaudier, *A Nighttime Temperature Maximum In The Thermosphere Above Saint Santin In Winter* J. Geophys. Res., 117, A6, doi:10.1029/2012JA017855, 2012
- **C. Martinis**, J. Baumgardner, J. Wroten, M. Mendillo, *Conjugate observations of midlatitude ionospheric structures in the American sector*, J. Geophys. Res., doi:10.1029/2010JA016264, 2011
- **C. Martinis**, J. Baumgardner, J. Wroten, and M. Mendillo, *Seasonal dependence of MSTIDs obtained from 630.0 nm airglow imaging at Arecibo*, Geophys. Res. Lett., 37, L11103, doi:10.1029/2010GL043569, 2010.
- Sahai, Y., F. Becker-Guedes, P. Fagundes, A. Abreu, R. de Jesus, V.G. Pillat, J. R. Abalde, **C. R. - Martinis**, C. Brunini, M. Gende, C. -S. Huang, X. Pi, W. L. C. Lima, J. A. Bittencourt, and Y.Otsuka. *Response of the ionospheric F-region in the South American sector during the October 2003 "Halloween Storms"*, Ann. Geophys., 27, 4463–4477, 2009
- M. Matta, S. Smith, J. Baumgardner, J. Wilson, **C. Martinis**, M. Mendillo. *The sodium tail of the Moon*, Icarus, 204, 409-417, 2009
- **C. Martinis**, J. Baumgardner, M. Mendillo, S.-Y. Su, N. Aponte. *Brightening of 630.0 nm equatorial spread-F airglow depletions*, J. Geophys. Res., 114, A06318, doi:10.1029/2008JA013931. 2009
- J. Krall, J. D. Huba, **C. R. Martinis**. *Three-dimensional modeling of equatorial spread F airglow enhancements*, Geophys. Res. Lett., 36, L10103, doi:10.1029/2009GL038441. 2009
- Mendillo M., S. Smith, A. Coster, P. Erickson, J. Baumgardner, **C. Martinis**, *Man-made space weather*, Space Weather, 6, S09001, doi:10.1029/2008SW000406. 2008
- **C. Martinis** and M. Mendillo, *Equatorial spread F-related airglow depletions at Arecibo and conjugate observations*, J. Geophys. Res., 112, A10310, doi:10.1029/2007JA012403, 2007.
- **C. Martinis**, Baumgardner, J., Smith, S. M., Colerico, M., and Mendillo, M., *Imaging science at El Leoncito, Argentina*, Annales Geophysicae , 24,1375-1385, 2006.
- **C. Martinis**, M. Mendillo, and J. Aarons, *Toward A Synthesis Of Equatorial Spread-F (ESF) Onset And Suppression During Geomagnetic Storms*, J. Geophys. Res., 110(A7), A07306, doi: 10.1029/2003JA010362, 2005.
- **C. Martinis**, J. K. Wilson, M. J. Mendillo, *Modeling day-to-day ionospheric variability on Mars*, J. Geophys. Res., 108 (A10), 1383, doi:10.1029/2003JA009973, 2003.
- **C. Martinis**, J. V. Eccles, J. Baumgardner, J. Manzano, and M. Mendillo, *Latitude dependence of zonal plasma drifts obtained from dual-site airglow observations*, J. Geophys. Res., 108 (A3), 1129, doi:10.1029/2002JA009462, 2003.

- **C. Martinis**, M. Mendillo, and J. Aarons, *The Intrusion of Auroral Processes Upon Low Latitude Dynamics and Irregularities*, Proceedings of the 2002 Ionospheric Effects Symposium (IES2002), Alexandria, Va, 2002.
- **C. Martinis**, J. Meriwether, R. Niciejewski, M. Biondi, C. Fesen and M. Mendillo, *Zonal Neutral Winds at Equatorial and Low Latitudes*, *Journal of Atmospheric and Solar Terrestrial Physics*, 63, 1559-1569, *J. Atmos. Sol. Terr. Phys.*, 2001.
- **C. Martinis** and J. Manzano, *The influence of active meteorological systems on the Ionospheric F-region*, *Annali di Geofisica*, 42.(1) 1-7, Feb 1999.

INVITED TALKS

2012

Conjugate ionospheric observations using all-sky imagers in the American sector from low to sub-auroral latitudes, Center for Atmospheric research, University of Massachusetts at Lowell, October 2012.

Low and midlatitude thermosphere/ionosphere processes during extreme solar activity conditions, 13th International Symposium on Equatorial Aeronomy, March 12-16, 2012, Paracas, Peru

2011

All-sky imaging studies of the low and midlatitude ionosphere, 20 October 2011, Center for Space Physics, Boston University

Optical studies of the low and midlatitude ionosphere, 7 June 2011, Institute of Atmospheric Research, Boston College

2010

Estudios ópticos de procesos relacionados con irregularidades en la ionosfera de baja latitud en el sector americano, 14 October 2010, Institute of Astronomy and Space Physics, Buenos Aires, Argentina

Optical diagnostics of ionospheric processes at low and mid latitudes, PASI: Pan-American Advanced Studies Institute, School and Workshop on the Dynamics and Chemistry of the Upper Atmosphere, October 4- 9, 2010, San Juan, Argentina

Estudios opticos de procesos ionosfericos en el sector americano usando all-sky imagers, 23 September 2010, Jicamarca Radio Observatory, Peru.

All-Sky Imaging Of Low latitude Thermosphere/Ionosphere Processes, VII Ibero-American Conference on Optics X Latin-American Meeting on Optics, Lasers and Applications (RIO-OPTILAS), 20-24 September 2010, Lima, Peru

Optical diagnostic of ionospheric instabilities at low and mid latitudes in the American sector, 2010 The Meeting of the Americas, AGU, 8-12 August, Foz do Iguassu, Brazil, 2010.

2009

All-sky imagers for inter-hemispheric studies of ionospheric instabilities in the American sector, Workshop: Towards the formation of a School on Upper atmosphere studies, Facultad de Ciencias Astronómicas y Geofísicas de La Plata, 23 November, 2009

All-sky imaging techniques to study the upper atmosphere, Tutorial given at the CEDAR Student Workshop, Santa Fe, NM, June 2009

Imaging studies of ionospheric instabilities, CEDAR Post-Doc Final Report, CEDAR workshop, Santa Fe, NM, June 2009

2007

Imaging studies of ionospheric irregularities at low and mid-latitudes, Center for Atmospheric research, UMASS Lowell, October 2007

PRESENTATIONS IN WORKSHOPS AND MEETINGS

- **C.Martinis**, J. Baumgardner, C. Brunini, T. Bullet, E. Gularte, D. Janches, P.Zablowski, Conjugate observations of ionospheric processes in the American sector, 13th International Symposium on Equatorial Aeronomy, March 12-16, 2012, Paracas, Peru
- D. Hickey, **C. Martinis**, A.Wright, B. Oliver, MTM Characteristics from Arecibo Incoherent Scatter Radar, 13th International Symposium on Equatorial Aeronomy, March 12-16, 2012, Paracas, Peru
- **C. Martinis**, P.Zablowski, J.Baumgardner, J.Wroten, M.Mendillo, Optical studies of thermosphere/ionosphere processes at low and midlatitudes, XXVI CEDAR Workshop, Santa Fe, NM, June 2011
- B. Garcia, I. Allekotte, L. Otero, R. Piacentini, P. Ristori, A.Rovero, A. Etchegoyen, **C. Martinis**, Argentina as a host for the Cherenkov Telescope Array, CTA Consorptium Meeting, Univ. Complutense de Madrid, 28 November- 2 December 2011, Madrid, Spain.
- C. Medina, I. Allekotte, G. De La Vega, B. Garcia, **C. Martinis**, L. Otero, R. Piacentini, P. Ristori, A.Rovero, A. Suarez, Atmospheric Monitoring of Argentinean Sites, 1 – 2 September 2011. CTA working group Meeting, Warsaw, Poland
- **C. Martinis**, J. Baumgardner, P. Zablowski, J. Wroten, and M. Mendillo, Optical And Radio Diagnostic of F-Region Equatorial And Mid Latitude Ionospheric Processes, 2010 The Meeting of the Americas, AGU, 8-12 August, Foz do Iguassu, Brazil, 2010.
- **C.Martinis**, P. Zablowski, C. Miller, J.Baumgardner, W. Oliver, M. Mendillo, Multi-instrument diagnostic of F-region equatorial and mid latitude ionospheric processes, XXV CEDAR Workshop, University of Colorado, Boulder, CO, 20-25 June 2010
- **C. Martinis**, J. Baumgardner, J. Wroten, M. Mendillo, and M. Nishioka, Coordinated Optical and Radio diagnostics of equatorial and midlatitude ionospheric processes, 2010 Beacon Satellite Symposium will be held in Barcelona, Spain, 7-11 June, 2010.
- **C. Martinis** P. Zablowski, M.Hairston, R. Pfaff, J. Baumgardner, M. Mendillo, Simultaneous Observation of C/NOFS Data and Related Optical Signatures from Midlatitude Ground-Based All-Sky Imagers, C/NOFS Science Workshop: Results and Equatorial Dynamics, Breckenridge, CO 18-20 May 2010

- **C. Martinis**, J. L. Baumgardner; J. Wroten; M. Mendillo, “ Conjugate Observations Of Low And Mid Latitude Ionospheric Processes In The American Sector”, 2009 Fall AGU meeting, San Francisco, CA.
- J. Baumgardner, S. M. Smith; M. Mendillo; **C. R. Martinis**; A. J. Coster; P. J. Erickson, A Rocket Exhaust Depletion (Red) Of Ionospheric Total Electron Content Detected By Multiple Diagnostics, 2009 Fall AGU meeting, San Francisco, CA.
- **C. Martinis**; Baumgardner, J.; Wroten, J.; Mendillo, M. ” Coordinated Ground-based Optical and Space-based Radio Investigations of Equatorial Aeronomy using GNSS Capabilities”, 2nd International Colloquium-Scientific and Fundamental Aspects of the Galileo Programme, Padova, Italy, October 2009
- M. Mendillo, Baumgardner, J.; Smith, S.; Wroten, J.; **Martinis, C.** “ Ionospheric Experiments-of-Opportunity Enabled by Communications and Navigation Satellite Systems” , 2nd International Colloquium-Scientific and Fundamental Aspects of the Galileo Programme, Padova, Italy, October 2009
- **C. Martinis**, ‘All-sky imaging techniques to study the upper atmosphere’, tutorial given at the CEDAR Student Workshop, Santa Fe, NM, June 2009
- **C. Martinis**, “Imaging studies of ionospheric instabilities”, CEDAR Post-Doc Final Report, CEDAR workshop, Santa Fe, NM, June 2009
- C. Miller, **C. Martinis**, W. Oliver, “ Use of Incoherent Scatter Radar Data to Study the Equatorial Midnight Temperature Maximum (MTM)”, CEDAR workshop, SANTA Fe, NM, June 2009.
- J. Krall, J. D. Huba, and **C. R. Martinis**, Three-Dimensional Modeling of Equatorial Spread-F Airglow Enhancements, CEDAR workshop, SAANTA Fe, NM, June 2009.
- J. Krall, **C. Martinis**, and J. Huba, Disruption of Equatorial Spread-F Leading to a Fossil Bubble and Airglow Enhancement, AGU Fall Meeting, 15-19 December, San Francisco, 2008.
- A. Rovero and **C. Martinis**, Wide angle camera to measure air transparency, Cerenkov Telescope Array meeting, 3-5 November 2008, Padova, Italy
- **C. Martinis**, J. Baumgardner, M. Mendillo, Simultaneous Observations Of Airglow Structures Related To ESF And MSTIDS At Arecibo, 37TH COSPAR Scientific Assembly, Montreal, Canada, 13- 20 July, 2008
- **C. Martinis**, J. Baumgardner, J. Wroten, M. Mendillo, 630.0 nm airglow observations at mid-latitudes, CEDAR Workshop, Midway, UT 16-21 June, 2008.
- **C. Martinis**, M. Mendillo, and J. Baumgardner, *Unusual 630.0 nm airglow variations at midlatitudes*, 12th International Symposium on Equatorial Aeronomy, Crete, Greece, 18-24 May, 2008
- **C. Martinis**, J. Baumgardner and M. Mendillo, The Simultaneous occurrence of airglow structures associated with ESF and MSTIDs in the Southern Hemisphere, 12th International Symposium on Equatorial Aeronomy, Crete, Greece, 18-24 May, 2008
- **C. Martinis**, J. Baumgardner, J. Wroten, S. Smith, M. Mendillo, *Imaging studies of upper atmospheric structures in the American sector*, VIII COLAGE, Merida, Mexico, 11-17 July, 2007.
- **C. Martinis**, J. Baumgardner, and M. Mendillo, *Imaging studies of ionospheric irregularities in the American sector and conjugate observations*, CEDAR Workshop, Santa Fe, New Mexico, 2007
- **C. Martinis**, M. Mendillo and M. King, *GPS Phase Fluctuations at Equatorial and Low Latitude Stations During Extreme Solar Activity Conditions*, International Beacon Satellite Symposium, Boston, MA, 11-15 June 2007

- T.L. Beach and **C.R. Martinis**, Updated Evaluation of GPS Phase Scintillation Measures for Equatorial Ionospheric Disturbances, International Beacon Satellite Symposium, Boston, MA, 11-15 June 2007.

- **C. Martinis**, and M. Mendillo, *ESF-related airglow depletions at Arecibo and conjugate observations*, Spring AGU meeting, Acapulco, Mexico, 22-25 May 2007

AWARDS AND MENTIONS

* CEDAR Post-doctoral Fellowship from NSF to study ionospheric irregularities at low and midlatitudes. (2006-2008)

* Best student poster, paper entitled ' Post-sunset equatorial irregularities and magnetic storms', presented at CEDAR 2003 Workshop, Longmont, Co.

* Honorable mention, paper entitled: '*Influence of auroral processes upon low latitude dynamics and irregularities*', poster presented at CEDAR 2002, Longmont, Co.

* Outstanding Student presentation Award, for the presentation of the paper: '*Latitude dependence of Thermospheric Neutral Winds and Plasma Drifts: Observations and modeling*', 2001 Spring AGU, Boston, Ma.

MEMBERSHIP OF COMMITTEES AND PROFESSIONAL SOCIETIES

* Member of the Scientific Organizing Committee of the NSF-sponsored 'PASI: School on Dynamics and Chemistry of the Uper Atmosphere', 4-9 October 2010, San Juan, Argentina.

* Member of the Academic Committee of the VII Ibero-American Conference on Optics 13-17 September 2010, Lima, Peru.

* Member of the Academic Committee of the X Latin-American Meeting on Optics, Laser and Applications, 20-24 September 2010, Lima, Peru

* Member of the SCOSTEP CAWSES-II Task Group 4, Projects 1 and 2

* Member of the American Geophysical Union (AGU)

* Member of the Asociación Latinoamericana de Geofísica Espacial (ALAGE)

* Member of the Student Prize committee of the ALAGE

STUDENT MENTORSHIP

* **Mentor for graduate research projects:**

Mr Dustin Hickey, GRS (Incoherent scatter radar data); Sep 2011-present

Ms Jillian Tromp, GRS (all-sky imaging data analysis); Sep 2010-May 2011

*** Mentor for undergraduate research projects**

Ms Rebecca MacInnis (all-sky imaging data and C/NOFS data analysis); Sep 2012-present

Ms Catherine Sullivan (all-sky imaging data processing); April 2012-present

Ms Ashley Wright, PHY (Incoherent scatter radar data analysis); May 2011-present

Ms Mounika Vutukuru (all-sky imaging data); Sep 2012-Dec 2012

Mr Paul Zablowski, CAS (all-sky imaging and C/NOFS satellite data); May 2009-Aug 2012

Mr Austin Collins and Mr Nate Wilkinson, ECE (Incoherent scatter radar data); June 2010-Dec 2010.

Mr Chris Miller, ECE (Incoherent scatter radar data); Sep 2008-May 2010

Ms Clara Narvaez, CAS (analysis of CHAMP satellite and imaging data); Sep 2007-May 2008

Ms Megan King, CAS (analysis of GPS data); Sep 2005-May 2007

PROPOSAL REVIEW PANELS

* NASA panel 'Living with a Star Tools and Methods', 2010.

* NSF Space Weather Panels, 2007, 2009

* NSF UAF proposals, 2011, 2012

* NSF CEDAR-Postdoc proposals, 2010

REVIEWER FOR SCIENTIFIC JOURNALS

* Journal of Geophysical Research,

* Geophysical Research Letters,

* Annales Geophysicae,

* Journal of Atmospheric and Solar-Terrestrial Physics

* Radio Science

* Earth, Planets and Space.

PROFESSIONAL COLLABORATIONS

R. Akmaev (NOAC/SWCP): modeling of MTM at Arecibo and El Leoncito

L. Goncharenko (MIT/Hystack Observatory): Low elevation angles studies of the thermosphere

J. Meriwether (Clemson University): FPI neutral winds and Temperatures

W. Oliver (Boston University): Radar data analysis for MTM signatures
Y. Sahai (Brazil): studies of geomagnetic effects and brightness waves in the American sector
C. Brunini (Universidad de La Plata, Argentina): GPS data and AIRES project collaborations
D. Janches (NASA/GODDARD): AIRES project collaborations.
K. Chau (IGP, Peru): study of equatorial processes using radar and optical diagnostics
B. Garcia (Pierre Auger Institute, Argentina): site characterization for installation of Cherenkov Telescope Array
J. Krall and J. Huba (NRL): modeling of airglow structures over Arecibo
M. Nishioka (Japan): GPS TEC maps using sparse ground-based receivers in South America
T. Yokoyama (NASA/GODDARD): modeling of E and F region coupling to study MSTIDs
M. Hairston (UT Dallas): DMSP and C/NOFS ion density and velocity data
P. Roddy (AFRL): Te data from PLP on board of C/NOFS, looking for MTM signatures
R. Pfaff (NASA/GODDARD): electric field measurements from VEFI instrument on C/NOFS
M. Hernandez-Pajares (Barcelona): climatological studies of MSTIDs at different longitudes
R. Redmon (NOAA): DMSP data to extract Te, Ti and ion densities.
M. Hairston (UT Dallas): DMSP and C/NOFS data analysis

SYNERGISTIC ACTIVITIES

- * Convener for a session at the 13th ISEA meeting, Paracas, Peru, Mar 12-17, 2012.
- * Interaction with Pierre Auger Laboratory colleagues to characterize long term clear sky conditions at El Leoncito for potential installation of a Cherenkov Telescope Array, 2010-present.
- * Collaborator for NSF proposals submitted in 2010 and 2011.
- * Co-I and collaborator for NASA proposals submitted in 2010 and 2011.
- * Convener of a Session on “Aeronomy Studies in Latin America ” at the 2010 AGU Meeting of the Americas, 8-12 August, Foz do Iguassu, Brazil, 2010.
- * Convener of a Session on “Ionospheric Gradients causes and effects” at the Fall AGU meeting San Francisco, 13-18 December 2009.
- * Executive Secretary for NASA Heliophysics Guest Investigator Program Panel Review, 2008.
- * Judge in the Student Poster competitions at 2008, 2009, and 2010 CEDAR workshops.
- * Convener of workshops at 2006 and 2008 CEDAR meetings.
- * Organized Student Workshop at the 2005 CEDAR workshop

* Judge at the O'Bryant Middle Science Fair, Boston MA, 2005, 2008, 2009.

* Responsible for maintenance and operational tasks of all-sky imaging systems at El Leoncito and Mercedes, Argentina.

LANGUAGES

Spanish: native

Italian: fluent

English: fluent