

# Ramona L. V. Perez

## School Address

Florida International University  
FIU Department of Physics, CP204  
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## EDUCATION

<i>Doctor of Philosophy</i> †, Physics	Florida International University	2008 - 04/2015
<i>Bachelor of Science</i> , Physics	Florida International University	2003 - 2008

†Dissertation Work: Measurement and analysis of fast ion loss in magnetically confined plasmas

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## EXPERIENCE - RESEARCH

Plasma Physics	<b>Research Assistant</b> FIU Physics Department, Werner Beoglin, Princeton Plasma Physics Laboratory (PPPL), Douglass Darrow, Culham Centre for Fusion Energy, Scott Allan, Ken McClements <ul style="list-style-type: none"><li>Designed, constructed, installed, and operated a new instrument to study fast ion loss and distribution during plasma instabilities in magnetically confined plasmas at the Mega Amp Spherical Tokamak</li><li>Currently analyzing data to validate the instrument</li><li>Success of initial results have led to support for a larger system to be developed for the National Spherical Torus Experiment at the PPPL</li><li><a href="http://phy.fiu.edu/twiki/bin/view/TWiki/FEPP">http://phy.fiu.edu/twiki/bin/view/TWiki/FEPP</a></li></ul>	04/2010 - Present
Physics Education	<b>Research Assistant</b> FIU Physics Department, Leanne Wells <ul style="list-style-type: none"><li>Researched quantitative impact of education reform and teacher preparation on introductory physics labs</li><li>Conducted research interviews (Institutional Review Board certified) and administered evaluation instruments</li></ul>	04/2008 - 12/2008
Solid-State Physics	<b>Research Assistant</b> FIU Physics Department, Wenzhi Li <ul style="list-style-type: none"><li>Synthesized novel ruthenium dioxide nanorods and fabricated carbon nanomaterials and thin film depositions</li><li>Designed experimental systems, trained new researchers, and calibrated, operated, and maintained lab equipment</li></ul>	08/2005 - 08/2007
Space Physics	<b>Research Assistant</b> Florida Institute of Technology Physics and Space Sciences Department, Ramon Lopez <ul style="list-style-type: none"><li>Analyzed solar-geophysical satellite data to graph changes in a specific region of the earth's magnetic field during geomagnetic storm conditions</li></ul>	06/2006 - 07/2006
Biology Ecology	<b>Laboratory Technician</b> FIU Biology Department, Jim Fourqurean <ul style="list-style-type: none"><li>Processed plant and abiotic samples for elemental and spectrophotometric analysis</li><li>Surveyed and collected (Scientific SCUBA Certification) samples in Florida Keys National Marine Sanctuary and Gulf of Mexico</li></ul>	02/2004 - 08/2005

Biology Everglades **Research Assistant** South Florida Water Management District, Christopher J. Madden 06/2001- 07/2001

- Processed abiotic data and performed field work
- Surveyed and collected samples in Everglades National Park related to projects: monitoring drought improvements, nutrient flow, and invasive species

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## EXPERIENCE - SKILLS

Experimental physical scientist with experience in instrument design, development, and validation in a collaborative fast-paced work environment

Electrical Design	<ul style="list-style-type: none"> <li>• <i>Example:</i> Experience in data acquisition electronics system design (decreased cost of system cables by a factor of 20, saving \$9K)</li> <li>• <i>Skills:</i> Created cable block diagrams and programs for interfacing to electronics, monitored electrical installation for projects, prepared electrical design reviews</li> </ul>
Equipment	<ul style="list-style-type: none"> <li>• <i>Current Research:</i> high-speed digitizers, modular crate electronics, pulse generators, radiation detection electronics, surface barrier detectors, vacuum pumps</li> <li>• <i>Past Research:</i> elemental analyzer, fluorometer, mass flow controller, mini electron-beam evaporator, sonicator, spectrophotometer</li> </ul>
Mechanical Design	<ul style="list-style-type: none"> <li>• <i>Example:</i> Successful instrument design (\$8K+ UHV mechanical housing for sensitive electronic instruments)</li> <li>• <i>Skills:</i> Created machine drawings, experience in ultra high vacuum (UHV) and high vacuum design and practices, prepared mechanical design reviews</li> </ul>
Programming	<ul style="list-style-type: none"> <li>• <i>Operating Systems:</i> Mac, Windows, Linux/Unix</li> <li>• <i>Languages:</i> Python, C, C++, Fortran 95, G (graphical language), shell scripting, IDL</li> <li>• <i>Skills:</i> Monte Carlo simulations, statistical analysis</li> </ul>
Project Management	<ul style="list-style-type: none"> <li>• <i>Control and Monitoring:</i> Developed troubleshooting techniques, identified risks and planned for contingencies, monitored schedules (including progress of student research activities), reinforced strong organizational skills, reprioritized tasks</li> <li>• <i>Cost Management:</i> Experience in budgeting (\$25K+ equipment and expenses), knowledge of purchase orders and vendor paperwork, managed international freight forwarding (\$40K+ worth of equipment)</li> <li>• <i>Dissemination:</i> Created and currently maintain group website/wiki page, first author and coauthor on peer-reviewed conference proceedings, developed oral presentation (technical and general) skills at: conferences, design reviews, and group meetings</li> <li>• <i>Project Planning and Execution:</i> Created status reports, prioritized tasks and developed schedules for instrument: design, construction, testing, installation, and operation (timescale of 2+ years)</li> <li>• <i>Team Development:</i> Advise student research activities (up to 6 students), create student research projects, run weekly group meetings, work within a large-scale collaboration</li> </ul>
Software	LaTeX, Solidworks, Vectorworks, AutoCAD, LabVIEW, GNU Make, Microsoft Office, Virtual Network Computing, Matlab
Web Meetings	H.323 Polycom, ReadyTalk, Skype

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## EXPERIENCE - TEACHING

Teaching Assistant	FIU Physics Department, PHY2049L Physics 2 <ul style="list-style-type: none"><li>• 3 Sections, Educationally reformed labs, Class size 20 students</li><li>• Monitored experiments, created and graded homework</li></ul>	01/2014 - 04/2014
	FIU Physics Department, PHY2048L Physics 1 <ul style="list-style-type: none"><li>• 9 Sections, Educationally reformed labs, Class size 30 students</li><li>• Monitored experiments, mentored Learning Assistants, and created and graded homework</li></ul>	08/2008 - 04/2010
Tutor and Learning Assistant	FIU Physics Learning Center, Center for High Energy Physics Research and Education Outreach, PHY2048/ PHY2049 <ul style="list-style-type: none"><li>• Physics 1 &amp; 2 with Calculus, Educationally reformed courses</li><li>• Assisted instructor in teaching, tutored, and graded homework</li></ul>	08/2005 - 04/2008

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## STUDENT ADVISING

Topic	Experimental Plasma Physics Research, FIU Physics Dept.	
Students	Adrianna Angulo, Undergraduate	04/2013 - Present
	Javiera LaTorre, Undergraduate	01/2014 - Present
	Douglas Tuckler, Undergraduate	01/2014 - Present
	Pierre Avila, FIU Alumni B.S. Physics	01/2011 - 06/2014
	Omar Leon, FIU Alumni B.S. Physics	01/2012 - 06/2014
	Carlos Lopez, FIU Alumni B.S. Physics	01/2012 - Present

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## HONORS

FIU University Graduate School Dissertation Year Fellowship	2014 - 2015
FIU Physics Department Graduate Research Competition 1 <sup>st</sup> Place	2014
FIU Scholarly Forum Physics Presentations 3 <sup>rd</sup> Place	2014
FIU College of Arts & Sciences Travel Support	2014
American Physical Society Forum on Graduate Student Affairs Travel Award for Excellence in Graduate Research	2014
FIU Graduate & Professional Student Committee Conference Travel Grant	2014
FIU Graduate & Professional Student Committee Research Travel Grant	2013
Ronald E. McNair Baccalaureate Program Fellow	2006 - 2015
Center for High Energy Physics Research and Education Outreach Fellow	2005 - 2008
South Florida Secondary Teacher Equity in Mathematics and Science Scholar	2005
Cristina Menendez Fellowship for Everglades Research	2004
Florida Department of Transportation Employee Dependent Scholarship	2004
Florida Bright Futures Scholarship	2003 - 2008
FIU Salutatorian Scholarship	2003 - 2005
FIU Presidential Scholarship	2003 - 2005
Advanced Placement Scholar	2003
Marsh Scholarship	2003
Salutatorian, Land O' Lakes High School, Tampa, FL	2003

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## SERVICE

Young Leaders Session FL AVS/FSM Joint Symposium, Co-Chair	2014
FIU Physics Graduate Program Review, Committee Member	2009 - 2010
2010 Zone 6 Regional Society of Physics Students Conference, Volunteer	2010
FIU Physics Department Colloquia Series, Volunteer	2008 - 2010
FIU Public Astronomy Colloquia Series, Volunteer	2008 - 2010
Miami Museum of Science Quantum Leap Event, Volunteer	2008
FIU Society of Physics Students Quantum Leap Event, Organizer, Volunteer	2008
CHEPREO Physics Department Open House, Volunteer	2006 - 2007

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## MEMBERSHIPS

AVS Science and Technology, Student Member	2012 - present
FIU Student Chapter of AVS, Founding Chair	2012 - 2014
FIU Society of Physics Students, President	2006 - 2008
FIU Society of Physics Students, Member	2005 - 2011

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## CONFERENCES AND WORKSHOPS

20 <sup>TH</sup> Topical Conference on High-Temperature Plasma Diagnostics	Atlanta, Georgia	06/2014
2014 FL AVS Science and Technology /FL Society for Microscopy (FSM) Joint Symposium	Orlando, Florida	03/2014
55 <sup>TH</sup> APS Division of Plasma Physics Meeting	Denver, Colorado	11/2013
Physics Education Research Conference	Edmonton, Alberta, Canada	06/2008
American Association of Physics Teachers Meeting	Edmonton, Alberta, Canada	06/2008
2008 Zone 6 Regional Society of Physics Students Conference	Orlando, FL	03/2008
Florida International Grid School 2008 Workshop	Miami, FL	01/23/2008 - 01/25/2008
Compact Muon Solenoid (CMS) Workshop	São Paulo, Brazil	08/06/2007 - 08/18/2007
FIU Ronald E. McNair Research Symposium	Miami, FL	08/2007
Georgia-Tech FOCUS Conference	Atlanta, GA	01/2007
NSU 2 <sup>ND</sup> Annual Future Tech Conference	Norfolk, VA	11/2006
FIU Ronald E. McNair Research Symposium	Miami, FL	09/2006
CISM Space Weather Weekend Workshop	Huntsville, AL	03/30/2006 - 04/02/2006
FIU Physics Modeling Instruction Workshop	Miami, FL	06/2005

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## AVAILABILITY

Graduating	May / June 2015
Flexibility	Willing to relocate nationwide or internationally
Travel Experience	Domestic, international

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## PRESENTATIONS

Conferences	<b>R.V. Perez</b> , W.U. Boeglin, D.S. Darrow, M. Cecconello, I. Klimek, S.Y. Allan, R.J. Akers, D.L. Keeling, K.G. McClements, R. Scannell, M. Turnyanskiy, A. Angulo, P. Avila, O. Leon, C. Lopez, O.M. Jones, N.J. Conway, and C.A. Michael. Investigating Fusion Plasma Instabilities in the Mega Amp Spherical Tokamak Using MeV Proton Emissions, <i>Invited Talk</i> , The 20 <sup>TH</sup> Topical Conference on High Temperature Plasma Diagnostics. Atlanta, Georgia	06/2014
	<b>Perez, R. V.</b> , S. Allen, W. U. Boeglin, M. Cecconello, K. G. McClements, D. S. Darrow, and the MAST team. First Results from a Charged Fusion Products Diagnostic at MAST, Poster session, APS DPP 55 <sup>TH</sup> Annual Meeting. Denver, Colorado	11/2013
	Wells, L. and <b>Valenzuela, R.</b> Impacts of the FIU PhysTEC reform of introductory physics labs, Poster session, Phys. Ed. Res. Conf. Edmonton, Canada	07/2008
	Wells, L. and <b>Valenzuela, R.</b> Impacts of the FIU PhysTEC reform of introductory physics labs, Poster session, AAPT National Meeting. Edmonton, Canada	07/2008
	<b>Valenzuela, R.</b> Synthesis of Ruthenium Dioxide Nanorods, Talk, Ronald E. McNair Research Symposium. Miami, FL	08/2007
	<b>Valenzuela, R.</b> Space Weather, Talk, Ronald E. McNair Research Symposium. Miami, FL	09/2006
Competitions	<b>R. V. Perez.</b> Investigating Fusion Plasma Instabilities, FIU Scholarly Forum. Miami, FL	03/2014
	<b>R. V. Perez.</b> Detecting Protons from DD Fusion Reactions to Study Plasma Instabilities, FIU Physics Department Graduate Research Competition. Miami, FL	04/2014
Seminars	<b>Perez, R. V.</b> Initial Results from the Proton Detector, Friday Physics Seminar. Culham Centre for Fusion Energy, Culham Science Centre, Abingdon, Oxfordshire, England	09/2013
Design Reviews	<b>Perez, R. V.</b> Charged Fusion Product Diagnostic Electrical Design Review, Culham Centre for Fusion Energy, Culham Science Centre, Abingdon, Oxfordshire, England	05/2013
	<b>Perez, R. V.</b> and Boeglin, W. Charged Fusion Product Diagnostic Mechanical Design Review, Culham Centre for Fusion Energy, Culham Science Centre, Abingdon, Oxfordshire, England	09/2012
	Boeglin, W. and <b>Perez, R. V.</b> Charged Fusion Product Diagnostic Final Design Review, Princeton Plasma Physics Laboratory, Princeton, New Jersey	04/2011
	Boeglin, W. and <b>Perez, R. V.</b> Charged Fusion Product Diagnostic Preliminary Design Review, Princeton Plasma Physics Laboratory, Princeton, New Jersey	02/2011
Outreach	<b>Valenzuela, R.</b> and Galvez, R. Introduction to Nanotechnology, Quantum Leap Event, Miami Science Museum. Miami, FL	07/2008
	<b>Valenzuela, R.</b> The Role of SPS and CHEPREO in our FIU Physics Community, 2008 Zone 6 Regional Society of Physics Students Conference. Orlando, FL	03/2008

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## PUBLICATIONS

- Journal Articles    S. Neupane, G. Kaganas, **R. Valenzuela**, L. Kumari, X. W. Wang, W. Z. Li, 07/2011  
Synthesis and characterization of ruthenium dioxide nanostructures, Journal of Materials Science, July 2011, Volume 46, Number 14, 4803-4811
- Lopez, R. E., S. Hernandez, K. Hallman, **R. Valenzuela**, J. Seiler, P. Anderson, and M. Hairston (2007), Field-Aligned Currents in the Polar Cap during Saturation of the Polar Cap Potential, J. Atmos. Sol. Terr. Phys., doi:10.1016/j.jastp.2007.08.072    08/2007
- Conference Proceedings    **R.V. Perez**, W.U. Boeglin, D.S. Darrow, M. Cecconello, I. Klimek, S.Y. Allan, R.J. Akers, D.L. Keeling, K.G. McClements, R. Scannell, M. Turnyanskiy, A. Angulo, P. Avila, O. Leon, C. Lopez, O.M. Jones, N.J. Conway, and C.A. Michael. Investigating Fusion Plasma Instabilities in the Mega Amp Spherical Tokamak Using MeV Proton Emissions, Submitted *Invited Manuscript*, The 20<sup>TH</sup> Topical Conference on High Temperature Plasma Diagnostics. Atlanta, Georgia    06/2014
- Boeglin WU, **Valenzuela Perez R**, Darrow DS. Concept of a charged fusion product diagnostic for NSTX. Rev. Sci. Instrum. 2010 Oct; 81(10):10D301, <http://dx.doi.org/10.1063/1.3464262>    10/2010
- Wells, L., **Valenzuela, R.**, Brewes, E., Kramer, L., O'Brien, G., & Zamolla, E., Impacts of the FIU PhysTEC reform of introductory physics lab, Phys. Ed. Res. Conf. Edmonton, Canada, 2008 AIP Conference Proceedings.    06/2008
- Abstracts    I. Wodniak, M. Cecconello, O.M. Jones, C.A. Michael, W.U. Boeglin, **R. V. Perez**, D.S. Darrow, S. Y. Allan, R. Lake, R.J. Akers, N.J. Conway, B. Crowley, K.G. McClements, R. Scannell, M. Turnyanskiy and the MAST team. Neutron and FIDA measurements of energetic ion behaviour in MAST, Poster session, The 17th International Workshop on Spherical Torus (ISTW2013). York Plasma Institute, York, England    09/2013
- Outreach    **Perez, Ramona L. V.** (2011). FIU physics department tea party. *Newsletter of the Committee on the Status of Women in Physics & the Committee on Minorities of the American Physical Society*, 30(2), 5.    09/2011
- Valenzuela, Ramona** (2008). SPS plans lecture series on women in physics. *Newsletter of the Committee on the Status of Women in Physics & the Committee on Minorities of the American Physical Society*, 27(2), 7.    09/2008