Diego C. B. Valente

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Academic CV

EDUCATION

University of Central Florida, Orlando
Doctor of Philosophy (Ph.D.) in Physics
Area of Emphasis: Theoretical Condensed Matter Physics
Dissertation: *Decoherence in Semiconductor Solid-State Quantum Computers.*
Advisor: Eduardo R. Mucciolo

Pontifical Catholic University of Rio de Janeiro (PUC-Rio), Brazil
Master of Science (M.Sc.) in Physics
Area of Emphasis: Theoretical Condensed Matter Physics
Thesis: *Stochastic Models for Volatility in the Brazilian Stock Market.*
Advisor: Rosane R. Freire.

Pontifical Catholic University of Rio de Janeiro (PUC-Rio), Brazil
B. Eng. in Electrical and Industrial Engineering
Specialization in telecommunications engineering and decision support systems.

PROFESSIONAL EXPERIENCE

Associate Professor in Residence and Director of Physics Teaching Laboratories
University of Connecticut, Storrs **Fall 2021 – Present**
Assistant Professor in Residence and Director of Physics Teaching Laboratories
University of Connecticut, Storrs **Spring 2017 – Summer 2021**
Responsibilities include teaching 1 course per semester, with activities such as developing course materials, lecturing, creating exams, and holding weekly office hours. Supervision of currently 1 honors conversion student research project. Leading department efforts to plan, redesign, and implement the conversion of three key introductory course sequences to a studio-based model of instruction, utilizing technology-assisted active learning tools and a student-centered pedagogical paradigm to blend lectures with practical hands-on activities.
Managerial responsibilities include managing laboratory courses in physics and astronomy, coordinating the design and operation of lower and upper division labs; supervising lab support staff and graduate teaching assistants; managing general laboratory budget and infrastructure.

Assistant Professor in Residence
University of Connecticut, Storrs **Fall 2016 – Spring 2017**
Responsibilities include teaching 3 courses per semester, with activities such as developing course materials, lecturing, creating exams, and holding weekly office hours. Supervision of currently 3 honors conversion student research projects. Leading department efforts to plan, redesign, and implement the conversion of three key introductory course sequences to a studio-based model of instruction, utilizing technology-assisted active learning tools and a student-centered pedagogical paradigm to blend lectures with practical hands-on activities.
Manages a program to collect student performance data based on concept inventory testing. This data is analyzed and compared with published data for similar tests, investigating widely adopted peer-reviewed metrics of student progress and teaching effectiveness.

Visiting Assistant Professor
University of Connecticut, Storrs **Fall 2013 – Summer 2016**
Responsibilities include teaching 3 courses per semester, with activities such as developing course materials, lecturing, creating exams, and holding weekly office hours. Supervised 6 honors conversion student research projects. Co-led department efforts to create a more uniform course experience across all sections of the Physics for Engineers course series, adopting modern pedagogical tools to enhance student learning, such as flipping the classroom and active learning with clickers. Co-led department initiative to implement concept inventory (FCI) testing in introductory mechanics courses and led initiative to implement similar testing (CSEM) for the electricity & magnetism introductory course to measure widely adopted peer-reviewed metrics of teaching effectiveness.

Postdoctoral Fellow
University of Connecticut, Storrs **Winter 2010 – Summer 2013**
Working in the theoretical atomic, molecular, and optical physics research group; employing quantum and semiclassical methods to calculate charge-transfer in ultracold atom-ion scattering; investigating hybrid platforms for quantum information that utilize ultracold molecular ions.
Supervisor: Prof. Robin Côté

Graduate Research Assistant
University of Central Florida, Orlando **Jun 2005 – Dec 2009**

Performed research in the theoretical condensed matter physics group; studied the several effects that lead to decoherence effects in quantum-dot setups of charge qubits, including electromagnetic fluctuations of the gate voltages and coupling to bulk phonon modes.

Graduate Teaching Assistant
University of Central Florida, Orlando **Aug 2004-May 2005**
Responsibilities included teaching laboratory sections in undergraduate level courses such as Physics for Scientists and Engineers I & II, and College Physics I, as well as grading several classroom sections of the same courses.

IT Manager for the Dept. of Industrial Engineering at PUC-Rio
Pontifical Catholic University of Rio de Janeiro, Brazil **Jan 2002 – Jul 2002**
Provided maintenance for department computers; Performed duties as department system administrator

TEACHING EXPERIENCE

PHYS 1201Q – General Physics I (algebra-based, service level course, 108-144 students)
PHYS 1202Q – General Physics II (algebra-based, service level, 108-144 students)
PHYS 1501Q – Physics for Engineers I (calculus-based, service level, 108-144 students)
PHYS 1502Q – Physics for Engineers II (calculus-based, service level, 108-144 students)
PHYS 1601Q – Fundamentals of Physics I (calculus-based, physics majors, 25 students)
PHYS 1602Q – Fundamentals of Physics II (calculus-based, physics majors, 20 students)
PHYS 2300 – The Development of Quantum Physics
PHYS 4099 – Independent Study
UNIV 1784 – Honors First Year Seminar

ADVISING EXPERIENCE

Master's students: 2
Undergraduate students: 4

AWARDS, HONORS AND DISTINCTIONS

University Senior Assessment Fellow, 2024-25

University Assessment Fellow, 2022-24

UConn College of Liberal Arts and Sciences Leadership Fellow, 2021-22

Official citation from the State of Connecticut's General Assembly, April 2021

Co-awarded the 2020 AAUP Teaching Innovation Award with Jason Hancock

Nominated 2x for the CETL Teaching Innovation Award (2017-2018, 2019-2020)

Commendation Letter for Excellence in Teaching from the Office of the Provost, University of Connecticut, Storrs, Spring 2014, Spring 2015, Fall 2016, Spring 2016, Fall 2016, Spring 2017, Fall 2017, Spring 2018, Spring 2019, Fall 2019

Distinguished as a 2016-2017 Scientific Teaching Fellow by the 2016 Summer Institute on Scientific Teaching, November 2016

Accepted into Sigma Pi Sigma, The Physics Honor Society, Fall 2007

Runner Up (Honorable Mention) for Graduate Teaching Assistant of the Year, University of Central Florida, Orlando, Spring 2005

Awarded Prize Fellowship for Graduate Student of the Year, Physics Department, Pontifical Catholic University of Rio de Janeiro (PUC-Rio), Brazil, Fall 2003 – Spring 2004

GRANTS AWARDED

2023 UConn College of Liberal Arts and Sciences Teaching Enhancement Grant (shared w/Matt Guthrie and Anthony Rizzie[UConn-Math])

"Studio Physics Redesign of the Physics for Engineers course sequence", Diego Valente (PI), Xian Wu (co-PI), and Jason Hancock (co-PI), 2019 CETL's Large Course Redesign Grant - $26,000

"Enhancing Student Preparation for Lab Activities Through Prelab Videos", Diego Valente (PI) and Belter Ordaz Mendoza (co-PI), 2018 CETL's Academic Mini Grant Competition - $3,878

"On-line Learning Suite Modules for Mediating Mathematical Skill with Physics", Xian Wu (PI) and Diego Valente (co-PI), 2017 Provost's Academic Plan Mini Grant Competition - $4,700

"Bridging the Gap Between Math and Physics", Diego Valente (PI), 2016 Provost's Academic Plan Mini Grant Competition - $3,000

"Targeted instruction through Physics Tutor Instruction (PT) videos", Diego Valente (PI), 2015 Provost's Academic Plan Mini Grant Competition - $3,700

"Physics/Math Data Integration of Student Performance", Diego Valente (PI), Amit Savkar (co-PI), Jason Hancock (co-PI), and Heather Osborne (co-PI), funded by CLAS, Spring 2016 – Spring 2017, $50,000

REFEREE WORK

Referee for *"The Physics Teacher",* July 2019

Served as a referee for articles submitted to *PERC Conference Proceedings* in Summer 2018 and 2019.

CONSULTING PROJECTS

I have completed a broad range of projects as a content author, content reviewer, and evaluator of a variety of printed and digital content for the main publishing companies in the USA. Since the Fall of 2015 my clients have included Pearson Education, W.H. Freeman and Company, Macmillan Learning, Cengage Publishing, and The Expert TA.

OUTREACH AND SERVICE

Current:

Co-chair of UConn's University Student Learning Assessment Committee (USLAC), Fall 2022 – Present

Chair of the Marshall Walker TA Award Selection Committee, Dec. 2019 – Present

Member of the UConn Undergraduate Lab Safety Committee, Fall 2017 – Present

Past:

Member of the Diversity & Multiculturalism Committee of the Department of Physics at UConn, Fall 2012 – Fall 2023

Group Facilitator at the follow up meeting of the Northeast Summer Institute on Scientific Teaching, University of Connecticut, Spring 2018 and Spring 2019

Member of the UConn Large Course Community of Practice, Spring 2017 and Spring 2018

Panelist at the UConn New Faculty Orientation, University of Connecticut, Fall 2017

Group Facilitator at the Northeast Summer Institute on Scientific Teaching, University of Connecticut, Summer 2017

Physics Department Laboratory Technician II search committee, University of Connecticut, (Spring 2017, Fall 2018, Spring 2019)

Physics Department Assistant Professor in Residence search committee, University of Connecticut, Spring 2017 and Spring 2018

Physics Teaching Mentoring Program for graduate students, mentor, University of Connecticut, Spring 2017

Physics Department Academic Assistant III (Manager of Physics Teaching Laboratories) search committee, University of Connecticut, Fall 2016

Physics Teaching Mentoring Program for graduate students, mentor, University of Connecticut, Spring 2016

Physics Department Physics for Engineers Textbook selection committee, University of Connecticut, Fall 2015

Physics Department Laboratory Technician II search committee, University of Connecticut, Fall 2015

Event Volunteer for 1st Annual Multi-Department "STEM-fest", University of Connecticut, May, 2015

Physics Department Lab Technician II search committee, University of Connecticut, Fall 2013

Invited Guest Speaker at the Summer Upward Bound (ConnCAP) Program for underprivileged high school students, University of Connecticut, Summer 2013

PUBLICATIONS, TALKS AND PRESENTATIONS

1. Diego Valente, James Jaconetta, and Zac Transport "*Incorporating Python-Based Digital Notebooks into Introductory Physics Labs"*, submitted as a contributed talk for the 2020 AAPT Summer Meeting
2. Diego Valente, Sarah Trallero, and Xian Wu "*A Large-Scale Transition to Studio-Based Physics in a State University"*, submitted as a contributed poster for the 2020 AAPT Summer Meeting
3. Diego Valente and James Jaconetta "*Pacemaker Circuit Simulator – A New RC Circuits Lab*", submitted as a contributed poster for the 2020 AAPT Summer Meeting
4. Diego Valente, Xian Wu, and Tianlong Zu *"Effects of group interactions on student cognitive load in vector tests",* contributed poster presentation, PERC 2019 (July 2019)
5. Xian Wu and Diego Valente, *"Adapting differentiated cognitive load measurement in physics classroom",* PERC 2019 Conference Proceedings (July 2019)
6. Diego Valente and Xian Wu, *"Do we make students do too much or too little: A cognitive load study",* contributed talk, 2019 AAPT Summer Meeting (July 2019)
7. Xian Wu, Diego Valente, and Jason Hancock, *"Initiating Studio Physics Transformation for the Introductory Physics Courses",* contributed talk, 2019 AAPT Summer Meeting (July 2019)
8. Diego Valente and Xian Wu, *"Calculus-based Physics students' understanding on vectors: a comparison between engineering students and life-science students"*, contributed talk, APS March Meeting (March 2019)
9. Diego Valente, Niraj Ghimire, and Jason Hancock, *"Initiating the Transition to Studio Physics in a Large Public University: A Case Study",* poster presentation, APS March Meeting (March 2019)
10. Diego Valente, Xian Wu, and Pablo Barniol *"A study on the effect of physical context in students' understanding of vectors",* contributed poster presentation, PERC 2018 (August 2018)
11. Xian Wu and Diego Valente, *"The Nature of Introductory Physics Students' Vector Difficulties with Physics Contexts",* contributed talk, 2018 AAPT Summer Meeting (July 2018)
12. Diego Valente and Aynsley Diamond, *"Emerging from the Arena: One university's experience with studio based physics education"*, poster presentation, Northeastern Educational Research Association Meeting (October 2017)
13. D.C.B. Valente, Amit Savkar, Fridah Mokaya, and James Wells, *"Examining student performance in an introductory Physics for Engineering course: A quantitative case study",* contributed talk, APS March Meeting (March 2017)
14. Fridah Mokaya, Amit Savkar, and D.C.B. Valente, *"A Taxonomy of Introductory Physics Concepts",* contributed talk, APS March Meeting (March 2017)
15. D.C.B. Valente, S. Banerjee, and R. Côté, "*Charge transfer in ultracold atom-ion alkaline-earth systems*", contributed talk, 2013 Joint Meeting of the APS DAMOP and CAP DAMOP (June 2013).

16. D.C.B. Valente and R. Côté, "*Charge transfer processes in ultracold atom-ion collisions*", contributed talk, 43rd Annual Meeting of the APS DAMOP (June 2012).
17. D.C.B. Valente and R. Côté, "*Ultracold Atom-Ion Schemes for Quantum Information*", poster presentation, 43rd Annual Meeting of the APS DAMOP (June 2012).
18. D.C.B. Valente and R. Côté, "*Ultracold atom-ion collisions with Beryllium*", contributed talk, 42nd Annual Meeting of the APS DAMOP (June 2011).
19. D.C.B. Valente and R. Côté, "*Hyperfine interactions and charge transfer processes in ultracold atom-ion collisions*", poster presentation, 42nd Annual Meeting of the APS DAMOP (June 2011).
20. D.C.B. Valente, E.R. Mucciolo, and F.K. Wilhelm, *"Decoherence by electromagnetic fluctuations in double quantum dot charge qubits",* Physical Review B **82**, 125302 (2010).
21. D.C.B. Valente, E. R. Mucciolo, and F. K. Wilhelm, *"Electromagnetic fluctuations as a source of decoherence for double quantum dot charge-based qubits",* contributed talk, APS March Meeting (2009).
22. M. Hentschel, D.C.B. Valente, E. R. Mucciolo, and H. U. Baranger, "*Decoherence in multiple-quantum-dot charge qubits",* contributed talk, First Annual Nanoscience Technology Symposium (NanoFlorida) (2008).
23. M. Hentschel, D.C.B. Valente, E. R. Mucciolo, and H. U. Baranger, *"Improving intrinsic decoherence in multiple-quantum-dot charge qubits"*, poster presentation, First International Conference on Quantum Error Correction(QEC) (2007).
24. M. Hentschel, D.C.B. Valente, E. R. Mucciolo, and H. U. Baranger, *"Improving intrinsic decoherence in multiple-quantum-dot charge qubits"*, Physical Review B **76**, 235309 (2007).
25. D.C.B. Valente, E.T.M. Costa, P.M.P. Gouvêa, I.C.S. Carvalho, M.C.R. Carvalho, W. Margulis,*"Sagnac Interferometer as a variable optical attenuator"*, Annals of Optics, poster presentation, XXVI ENFMC, (2003).
26. E.T.M. Costa, D.C.B. Valente, P.M.P. Gouvêa, I.C.S. Carvalho, M.C.R. Carvalho,*"Single-mode coupled-cavity fiber laser"*, Annals of Optics, poster presentation, XXVI ENFMC, (2003)