Phillip D. H. **Wall**

Medical Physicist-in-Training · Ph.D. Candidate · Researcher

ABR Status: Passed Part 1

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Education

Louisiana State University, CAMPEP Accredited — *Baton Rouge, LA*

Doctor of Philosophy - Physics, Medical Physics Concentration — *Aug. 2017 - present*

- Pursuing doctoral studies and researching machine learning applications in radiation therapy treatment planning and quality assurance

Louisiana State University, CAMPEP Accredited — *Baton Rouge, LA*

Master of Science - Medical Physics — *Aug. 2014 - Jul. 2017*

4.03 GPA

- Completed didactic and clinical coursework before completing M.S. thesis research investigating database plan quality impact on knowledge-based radiation therapy treatment planning of prostate cancer

Davidson College — *Davidson, NC*

Bachelor of Science - Physics & Mathematics — *Aug. 2010 - May 2014*

3.74 GPA

- Graduated *cum laude* majoring in physics and mathematics

Skills

Software/Programming Python, MATLAB, RayStation, Word, Powerpoint

Web Django, HTML5

Clinical Experience

Research

Louisiana State University

Image quality optimization for MR-guided cervical cancer brachytherapy — *Baton Rouge, LA*

PI: Abbie Wood, Ph.D. — *Jun. 2017 - PRESENT*

- Led preparatory literature research and fabricated several carrageenan-based phantoms with specific compositions computed to yield equivalent relaxation times of healthy endometrial tissue and cnacerous cervical tissue for a 1.5-T MR scanner
- Currently verifying and validating the MR properties of the phantoms before developing imaging protocol to improve image contrast between cancerous cervical tissue and healthy endometrium

Database plan quality impact on knowledge-based radition therapy treatment planning of prostate cancer — *Baton Rouge, LA*

Advisor: Jonas Fontenot, Ph.D. — *Jan. 2016 - Jul. 2017*

Master's Thesis

- Overall goal was to improve the quality and consistency of treatment plans
- Knowledge-based planning (KBP) leverages clinical plan data from a database of previously treated patients to inform the plan design of a new patient
- Investigated bladder and rectum dose-volume prediction improvements in a common KBP method using a Pareto optimal plan database compared with a conventional, clinical plan database in VMAT planning for prostate cancer
- KBP dose-volume predictions derived from Pareto optimal plans were better than predictions derived from manually optimized clinical plans
- A re-planning study verified the lower KBP dose-volume predictions were achievable via inverse planning and led to a significant reduction in bladder and rectum dose

Davidson College

Digitome volumetric x-ray imaging applications in liberal arts — *Davidson, NC*

Advisor: Dan Boye, Ph.D. — *May 2013 - May 2014*

- First student operator of novel volumetric x-ray imaging system called Digitome
- Learned to produce quality radiographs and volumetric exams
- Created and developed calibration and exam protocols for futre use including new dual energy and multiple source protocols
- Provided product feedback to company Chief Executive Officer and Chief Software Architect and trained new student operators
- For more information on Digitome at Davidson, visit `http://digitome.davidson.edu/`

University of Alabama at Birmingham

Investigating point defects in iron-doped gallium nitride — *Birmingham, AL*

Advisor: Mary Ellen Zvanut, Ph.D. — *May 2012 - Aug. 2012*

Research Experience for Undergraduates (REU)

- Utilized electron paramagnetic resonance (EPR) spectroscopy to observe and analyze thermal, chemical, and optical properties and angular dependence of point defects in iron-doped gallium nitride

Publications

Peer-Reviewed Papers

1. **Phillip DH Wall**, Robert L Carver, and Jonas D Fontenot. An improved distance-to-dose correlation for predicting bladder and rectum dose-volumes in knowledge-based VMAT planning for prostate cancer. *Physics in Medicine Biology*, 63(1):015035, 2018

Proffered Abstracts

1. **Phillip DH Wall**, Robert L Carver, and Jonas D Fontenot. Improved knowledge-based bladder and rectum dose-volume predictions using a database of Pareto optimal plans in VMAT planning for prostate cancer. AAPM Annual Meeting, 2017
2. **Phillip DH Wall**, Robert L Carver, and Jonas D Fontenot. An improved distance-to-dose correlation for predicting bladder and rectum dose-volumes in knowledge-based VMAT planning for prostate cancer. AAPM Spring Clinical Meeting, 2017

Open-Source

1. **Phillip DH Wall**. *Javelin Dynamics Model*. Open Souce Physics, 2012. Available at: `http://www.compadre.org/osp/items/detail.cfm?ID=12110`

Articles

1. **Phillip DH Wall**. AAPM 2017: A First-Time Attendee's Perspective. *AAPM Newsletter*, 42(5), Sept/Oct 2017

Presentations

Conferences

1. *Improved Knowledge-Based Bladder and Rectum Dose-Volume Predictions Using a Database of Pareto Optimal Plans in VMAT Planning for Prostate Cancer*. Oral Presentation, AAPM Annual Meeting; Denver, CO, Aug. 3, 2017
2. *An Improved Distance-To-Dose Correlation for Predicting Bladder and Rectum Dose-Volumes in Knowledge-Based VMAT Planning for Prostate Cancer*. Young Investigator Symposium, AAPM Spring Clinical Meeting; New Orleans, LA, Mar. 18, 2017

Educational Seminars and Lectures

1. *Experimental Comparison of Grating- and Propagation-based Hard X-ray Phase Tomography of Soft Tissue by Lang et al.* MEDP 7995 Seminar, Louisiana State University; Baton Rouge, LA, Sep. 18, 2015
2. *Three-dimensional Liver Motion Tracking Using Real-Time Two-dimensional MRI by Brix et al.* MEDP 7995 Seminar, Louisiana State University; Baton Rouge, LA, Nov. 14, 2014
3. *Dual Energy X-ray Imaging with Digitome®*. Physics Department Seminar, Davidson College; Davidson, NC, Apr. 25, 2014

4. *Path Connectedness of Topological Spaces*. Lecture for MAT360: Topology, Davidson College; Davidson, NC, Apr. 3, 2014
5. *Continuity for Functions Between Topological Spaces*. Lecture for MAT360: Topology, Davidson College; Davidson, NC, Feb. 27, 2014
6. *Interior and Closure of Sets and Limit Points*. Lecture for MAT360: Topology, Davidson College; Davidson, NC, Jan. 30, 2014
7. *Investigating Point Defects in Iron-Doped Gallium Nitride*. REU Symposium, University of Alabama at Birmingham; Birmingham, AL, Jul. 25, 2012

Posters

1. *Volumetric X-ray Imaging: Exploring the Potential of Digitome®*. Fall Joint Meeting of SACS-AAPT, NCS-AAPT and SPS Zone 5, Furman University; Greenville, SC, Oct. 26, 2013
2. *Volumetric X-ray Imaging: Exploring the Potential of Digitome®*. Summer Research Symposium, Davidson College; Davidson, NC, Sep. 3, 2013
3. *Digitome®: Testing Its Measuring Capability and X-ray Absorption*. Science and Math Student Research Symposium, Davidson College; Davidson, NC, May 8, 2013
4. *Investigating Point Defects in Iron-Doped Gallium Nitride*. UAB Summer Research Expo, University of Alabama at Birmingham; Birmingham, AL, Jul. 26, 2012
5. *Javelin Throwing: The Search for Optimal Distance*. Science and Math Student Research Symposium, Davidson College; Davidson, NC, May 9, 2012

Honors & Awards

2017	**Finalist**, Conference of Southern Graduate Schools Master's Thesis Award	*Baton Rouge, LA*
2017	**Finalist**, Young Investigator Symposium, AAPM Spring Clinical Meeting	*New Orleans, LA*
2017	**Student Travel Award**, LSU Graduate Student Association	*New Orleans, LA*
2016-now	**Research Assistantship**, LSU Department of Physics & Astronomy	*Baton Rouge, LA*
2015	**Medical Assistantship**, LSU Department of Physics & Astronomy	*Baton Rouge, LA*
2014-2015	**Teaching Assistantship**, LSU Department of Physics & Astronomy	*Baton Rouge, LA*
2014	**Phi Beta Kappa**, Davidson College Chapter	*Davidson, NC*
2014	**Sigma Pi Sigma Chapter Project Award**, Project Leader	*Davidson, NC*
2013	**Sigma Pi Sigma**, Davidson College Chapter	*Davidson, NC*
2012	**R. Bruce Jackson Jr. Mathematics Award**, given to junior demonstrating great promise in mathematics	*Davidson, NC*
2012	**3rd Place**, UAB Summer Research Exposition	*Birmingham, AL*
2012 - 2014	**Outstanding Chapter Award**, Society of Physics Students	*Davidson, NC*

Extracurricular Activity

PLOS ONE — *San Francisco, CA*

Peer Reviewer — *Feb. 2018 -present*

International Journal of Radiation Oncology * Biology * Physics — *Arlington, VA*

Peer Reviewer — *Jan. 2018 -present*

LSU Undergraduate Research Conference — *Baton Rouge, LA*

Judge — *Nov. 17, 2017*

Crisis Intervention Center — *Baton Rouge, LA*

Volunteer Crisis Intervention Specialist — *Sep. 2017 - present*

- Completed rigorous training (70+ hours) to become volunteer crisis intervention specialist counselor for crisis intervention and suicide prevention
- For more information about the Crisis Intervention Center, visit: `https://cicla.org/`

New Professionals Subcommittee & Professional Mentorship Working Group

Alexandria, VA

Guest Member

Jun. 2017 - present

American Association of Physicists in Medicine

LSU Discover Day

Baton Rouge, LA

Volunteer

Apr. 4, 2017

- Registered participating students and judges for university-wide undergraduate research symposium

Private Tutor

Baton Rouge, LA

Department of Physics & Astronomy

Jan. 2017 - present

- Tutor local high school and undergraduate students in introductory physics and mathematics courses
- 5-star tutor rating via Tutor Matching Service: `https://tutormatchingservice.com/#/tutor/4488`

American Nuclear Society - LSU Student Chapter

Baton Rouge, LA

President/Member

Aug. 2016 - present

- Led Girl Scout Get to Know Nuclear Worshop; led activity teaching local Girl Scout troops about radioactivity and half-life by oberving the 'half-life' of pennies
- Led Boy Scout Merit Badge Workshop; led an electroscope activity for Boy Scouts at the Riverbend Nuclear Power Plant

LSU Medical Physics & Health Physics Graduate Program

Baton Rouge, LA

Program/Medical Assistant

Jan. 2016 - May 2016

- Led organization and preparation for multiple outreach evens and program promotion projects
- Manned program booths at LSU Career Expo and LSU Graduate Studies Fair
- Created informational brochures for all degree tracks (4) in the program
- Served as student liason for prospective program applicants
- Led planning and organization of social events for applicant interview weekend
- Assisted in compilation and editing of student-led program audit
- Assisted program director with CAMPEP re-accreditation process

LSU Department of Physics & Astronomy

Baton Rouge, LA

Teaching Assistant

Aug. 2014 - Aug. 2015

- Instructed two sections each semester (totaling 150+ students) of general physics II laboratory (PHYS 2109)
- Prepared weekly lectures covering topics in electricty, magnetism, and optics, among others
- Graded weekly lab reports; wrote and graded final exam
- Tutored physics for undergraduates in Nicholson Tutoring Center 5 hours every week
- Proctored mid-semester and final exam for introductory phyiscs courses

Davidson College Society of Physics Students

Davidson, NC

President (2013-14)/Secretary (2012-13)/Memeber

Aug. 2011 - May 2014

Davidson College Bernard Society of Mathematics

Davidson, NC

Officer (2013-14)/Member

Aug. 2012 - May 2014

Davidson College Math and Science Center

Davidson, NC

Physics and Math Tutor

Aug. 2011 - May 2014

Davidson College Mathematics Department

Davidson, NC

Homework Grader

Aug. 2010 - May 2012

Ada Jenkins Center

Davidson, NC

Tutor

Aug. 2010 - May 2011

LEARN Works Program