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DANIEL VERGARA

PROFILE SUMMARY

Medical Physicist with over a decade of experience, specializing in diagnostic imaging. I am MQSA certified and ABR board certified in Diagnostic Medical Physics.

Education

- Residency: Diagnostic Medical Physics, UAB 2018 (CAMPEP accredited).
- Graduate degree: M.S. Medical Physics, FAU 2012 (CAMPEP accredited).
- Certificate in Medical Physics, FAU 2011.
- Undergraduate degree: B.S. Physics, FAU 2008.
- Undergraduate minors: Math & Painting.

Career History

- I have over 10 years clinical experience as a Medical Physicist.
- Proficient in quality control, equipment evaluation and ACR accreditation for the following modalities:

Diagnostic Physics			
Radiography	**CT / CBCT**	**Molecular Imaging**	**GM Meter**
Mammography	**Fluoroscopy**	**PET/CT**	**Dose Calibrator**
3D Mammo	**MRI**	**PET/MR**	**Well Chamber**
Stereo/Biopsy	**US & Doppler**	**Hotlab**	**Thyroid Probe**

- Eliminated calculation error in PSD estimation by over 50% while doubling fluoroscopy dose tracking in the health system. Accomplished this by creating and managing a sophisticated parameterized and model based dose calculation algorithm.
- Slashed CT doses and improved image quality for patients by over 20% in the Yale New Haven Health system.
- Internal dosimetry and fetal dose calculation experience using various methods, including S-values and advanced organ modeling.
- Experienced in development and testing of medical products, including product vision and International Electrotechnical Commission (IEC) compliance testing.
- Extensive experience and knowledge also in radiation therapy medical physics. Specifically, in beam model commissioning, annual QA, IMRT and VMAT QA.

Leadership, Public & Professional Relations Experience

- Faculty, lecturer and mentor for the Diagnostic Medical Physics Residency program at Yale New Haven Hospital and Yale School of Medicine (2018 – Present), overseeing four residents, annually.
- Lead Trainer for Sun Nuclear (2012 – 2014).
- I have accumulated extensive Gammex/Sun Nuclear product knowledge, multi-departmental clinical methodology and best-practices in Medical Physics on a global scale.
- Volunteering in AAPM subcommittees and RSNA/AAPM physics modules.

EXPERIENCE

Diagnostic Medical Physicist, Department of Radiology and Biomedical Engineering Sciences, Yale New Haven Health (August 2018– Present)

CLINICAL DUTIES

- Perform QC of diagnostic and imaging modalities for the departments of Radiology, Heart and Vascular Center & Nuclear Cardiology: Radiography, CT, MRI, Fluoro/Angiography, Mammography, PET, SPECT/CT and Ultrasound.
- Eliminated calculation error in PSD estimation by over 50% while doubling fluoroscopy dose tracking in the health system. Accomplished this by creating and managing a sophisticated parameterized and model based dose calculation algorithm.
- Manager of Fluoroscopy peak skin dosimetry program for the Yale New Haven Health system.
- Supervisor for General Radiography and Ultrasound QC programs.
- Maintaining TJC, ACR, ICANL and MQSA compliance across the Yale New Haven Health system.
- Perform CT protocol and dose management using Radimetrics™ and ACR DIR.
- Slashed CT doses and improved image quality for patients by over 20% in the Yale New Haven Health system.
- Create and evaluate shielding designs for radiological and nuclear imaging modalities.
- Perform and report patient dose & fetal dose calculations.
- General Radiography protocol management and Repeat/Reject analysis.
- Shielding design and calculation of all radiological imaging systems.
- Assistant to the Radiation Safety Officer for two delivery networks of the Yale New Haven Health system. I perform all quarterly, semi-annual, and annual hot lab QC and audits. I also manage the personal dosimeter badge program for two delivery networks, as well as quarterly review of personal dosimeter badges.

EDUCATIONAL DUTIES

- Developed and manage the Diagnostic Medical Physics Residency program (CAMPEP accredited 2020) through collaboration with colleagues.
- Faculty and mentor within the Diagnostic Medical Physics Residency (CAMPEP accredited) for 4 physics residents, annually.
- Faculty Lecturer for Yale University School of Medicine radiology residents and technologists.

RESEARCH

- Fluoroscopy skin dosimetry calculation and management
- Fluoroscopy lens of eye dosimetry
- CT Dosimetry
- Ultrasound quality control

Diagnostic Medical Physics Resident, Department of Radiology Division of Physics and Engineering, University of Alabama at Birmingham (July 2016– July 2018)

CLINICAL DUTIES

- CAMPEP accredited residency program.
- Experience in quality control, including annual testing, acceptance testing and ACR accreditation, in all imaging

modalities.

- Radiographic and CT protocol management.
- DICOM metadata analysis and interpretation of image sets for all modalities.

EDUCATIONAL DUTIES

- Shielding design and evaluation for radiological and nuclear imaging modalities.
- Patient dose & fetal dose calculations.
- Teaching of fundamental radiation physics and US physics to radiology residents.

RESEARCH

- Pediatric X-ray protocol optimization.
- CT shielding calculation methodologies for modern CTs.

Medical Physicist, Aktina Medical – New York (June 2015 – June 2016)

CLINICAL DUTIES

- Performed TG-142 Annual QA to LINACs including Siemens Primus and Varian Clinac iX for clinics within the New York area.
- Commissioned LINAC beam models, including Varian TrueBeam XTS and Elekta Agility.

INDUSTRY, RESEARCH & DEVELOPMENT

- Lead customer support for the Aktina product line.
- R&D product design. This included creating and managing the commercial requirement specifications, and being a member of the product vision team.
- R&D product testing and validation, included compliance testing for IEC Safety and Physics Standards.
- Attended conferences and trade shows as an Aktina representative, such as ASTRO.

Regional Manager, PTW – New York (December 2014 – March 2015)

INDUSTRY, RESEARCH & DEVELOPMENT

- Familiar with PTW ionization chambers and diodes, including the microDIAMOND.
- Fully trained in the utilization of Octavius ionization chamber arrays, and MP3 water tanks.
- Achieved familiarity with ACT CRM and Quotewerks ™ for customer record management.

Product Training Physicist, Sun Nuclear Corporation (July 2012 – Nov. 2014)

CLINICAL DUTIES

- Expert user for the following pre-treatment IMRT and VMAT QA products: MapCHECK & MapCHECK2, ArcCHECK, EPIDose and 3DVH

- Expert user for the following machine and routine QA products: 3D Scanner, 1D Scanner, Daily QA3, Profiler2 and IC Profiler.
- Collaborated to commission and maintain accurate beam models for Pinnacle v9.2 and Ray Station using a Varian Clinac iX LINAC.
- Installed and interfaced Sun Nuclear products with Eclipse (versions 10-12), Pinnacle (versions 9.0-9.8), Monaco CMS, Xio CMS, Ray Station, Aria, and Mosaic.

EDUCATIONAL DUTIES

- Performed installations, training, and maintenance of Sun Nuclear products at customer sites within the Americas, Caribbean islands and occasionally to other nations. This roll required an average of 80% of global travel to customer clinic locations.
- Performed web training sessions and in-house training of products to customers and Sun Nuclear colleagues at the Sun Nuclear Training Center.

INDUSTRY, RESEARCH & DEVELOPMENT

- Provided support to the Support Operations team for technical issues at customer sites and headquarters.
- Assisted in the development and testing of QA products. Products include: 3DVH, ArcCHECK, and 3D Scanner.
- Collaborated to create procedures for Sun Nuclear product uses and Field Services.
- Attended conferences and trade shows as a Sun Nuclear representative, such as ASTRO.

Clinical Medical Physicist, Lynn Cancer Institute, Boca Raton Regional Hospital (Jan. 2011 – July 2012)

CLINICAL DUTIES

- Performed quality assurance to IMRT, Rapid Arc, IGRT, and SBRT treatment plans.
- Performed quarterly, monthly and daily quality assurance on the following treatment equipment: Varian 21 EX, Trilogy, and Novalis.
- Aided in annual quality assurance and calibration to the treatment equipment like Varian 21 EX, Trilogy, and Novalis.
- Testing the LAP Aquarius phantom QA capabilities for patient alignment lasers and patient SIM in MRI.
- Performed treatment planning for HDR treatments, and IMRT treatments using BrainLab and Eclipse systems.
- Worked in an IMRT post treatment correlation study of the V50 and V90 for Axillary Lymph Node carcinomas as a Breast Cancer recurrence within the diagnosed breast quadrant.

Clinical Medical Physicist, Wellington Regional Cancer Center (June 2009 – July 2012)

CLINICAL DUTIES

- Planned 3D conformal, IMRT, SRS and HDR using the following TPS software: Eclipse, BrainLab and Oncentra.
- Performed weekly chart checks.
- Performed annual and monthly QA on Trilogy and Novalis and Ir-192 source exchanges.
- Performed IMRT QA.

Florida Atlantic University, Boca Raton, FL (January 2006 – June 2012)

EDUCATIONAL DUTIES

- Lab Instructor and Research/Teacher Assistant.
- Taught Physics students technical writing and how to complete successful fundamental experiments.
- Tutored in Physics and grading student's lab reports during office hours.
- Wrote the solutions manual for class homework.

RESEARCH

- Conducted research in Raman Spectroscopy of Biological specimens in the Optics Lab.
- Designed and built equipment for microscopes and the spectrometer housing.
- Experienced in machining metals using the milling machine, lathe, sand blaster, band saw and threading equipment.

EDUCATION

Graduate Institution: Florida Atlantic University, Boca Raton, Florida (CAMPEP accredited)

Degree: Masters of Science in Medical Physics: 5/3/2012

Thesis: "A Characterization of the LAP Aquarius Phantom for External LAP Laser Alignment and Magnetic Resonance Geometric Distortion Verification for Stereotactic Radiation Surgery Patient Simulation"

Certificate in Medical Physics: December 2011

Undergraduate Degree: Bachelor of Science in Physics: 12/11/2008

Minors: Mathematics, Painting

OTHER RELEVANT SKILLS

Diagnostic Medical Devices

- **Radiographic Systems:** Siemens DR, GE DR, Philips DR, Canon/Shimatzu DR, Carestream DR, SmartRad DR, Fuji CR & DR, Tingle CR, CPI CR, and Summit CR.
- **Fluoroscopy and Angiography Systems:** Siemens, Philips, GE-OEC, Ziehm, Orthoscan, Hologic, Medtronic O-arm, and Varian Acuity Simulator.
- **Mammographic Systems:** Hologic FPDD & DBT, GE Senoclaire & Senographe, Philips DBT, and Fuji CR.
- **CT Systems:** GE 750HD Discovery & Revolution, Philips iCT 256 & Brilliance 16, 64 & 16 Wide Bore, and Siemens SOMATOM Force & Edge.
- **MRI Systems:** Siemens MAGNETOM Avanto, Aera, Espree, Vida, Skyra & Prisma, GE Optima, and Philips Ingenia.
- **Molecular Imaging Systems:** GE 640, 670, 850, 530 CZT SPECT, 570 CZT SPECT/CT, Ventri SPECT, Hawkeye Infinia SPECT/CT, Millennium Myosight SPECT, Siemens Symbia and E.Cam SPECT/CT, Philips Forte and CardioMD, MDX SPECT.
- **PET-CT:** GE Discovery 710 and Siemens Biograph 40 & mCT.
- **PET-MR:** GE Signa.

Radiation Therapy Medical Devices

- **Patient Dose QA**: MapCHECK & MapCHECK2, ArcCHECK, EPIDose, 3DVH, PTW 729/1500/1000^{SRS} and Octavius.
- **Machine QA**: PTW MP3, 3D Scanner, 1D Scanner, Daily QA3, Profiler2, and IC Profiler.
- **Treatment Planning Software**: Eclipse and Pinnacle.
- **Linear Accelerators**: Varian 21 EX, iX, Trilogy, Novalis and TrueBeam. Siemens Primus and Oncor. ELEKTA Agility and Compact

Software Expertise (General)

- Sales Force CRM
- Microsoft Office Suite
- MATLAB
- Minitab

Software Programming

- Excel Visual Basic
- Python
- C++
- MATLAB

PROFESSIONAL MEMBERSHIP

- American Association of Physicists in Medicine (AAPM) since 2016
- AAPM Maintenance of Certification Subcommittee (MCSC)
- AAPM Computer Aided Image Analysis Subcommittee (CADSC) Task Group No. 273
- AAPM New Professionals Subcommittee (NPSC)
- AAPM Task Group No. 309 - Task Group on Imaging Protocol Management System Design
- Radiological Society of North America (RSNA) since 2016
- Medical Physics World Benefit (MPWB) since 2017

PUBLICATIONS & PRESENTATIONS

- Invited Speaker: *"Peak Skin Dosimetry of Fluoroscopy Guided Interventional Procedures: Process, Standards, and Clinical Practice"*, Connecticut Association of Medical Physicists (CAMPS) Chapter Meeting, Middletown, CT – May 2022.

- (Submission in progress): *"The Use of Hybrid Computational Phantoms to Estimate the Patient's Peak Skin Dose During Fluoroscopically Guided Interventional Procedures (FGIPs)"* R *Makkia, M Fadhel, M Hoerner,* ***D Vergara***, Snap Oral Presentation Session, Annual Meeting, American Association of Physicists in Medicine (AAPM), Washington D.C. – July 2022.

- (Submission in progress): *"CT Beam Width Measurement Using a CTDI Pencil Chamber"*, M Fadhel, K Grizzard, **D Vergara**, R Perez Franco, M Hoerner, Imaging e-Poster BLUE RIBBON Session, Annual Meeting, American Association of Physicists in Medicine (AAPM), Washington D.C. – July 2022.

- (Submission in progress): *"Annihilation Gamma-Ray Interference In Tc-99m Clinical Images: Energy Spectrum Softening Due To Lead Shielding"*, **D Vergara**, K Grizzard, Interactive e-Poster Discussion Session, Annual Meeting, American Association of Physicists in Medicine (AAPM), Washington D.C. – July 2022.

- ***"****First Time Implementation of a Physics Ultrasound (US) Testing Program: Analysis and New Lessons",* K. Stiles, R. Makkia, **D. Vergara**, A. Dohatcu, Poster Session, American Association of Physicists in Medicine (AAPM) Spring Meeting, New Orleans, LA – March 2022.

- *"Evaluating the Kerma Correction Factor of Modern Fluoroscopy Systems"*, M Fadhel, R Perez Franco, **D Vergara**, Interactive e-Poster Session, Annual Meeting, American Association of Physicists in Medicine (AAPM), Virtual, July 2021.

- *"Conformance Analysis Between Positive Beam Limitation Quality Control Methods in Digital Roentgen-Ray Imaging"*, R Perez Franco, M Fadhel, **D Vergara**, A Mustafa, I Bercha, General e-Poster Presentation, Annual Meeting, American Association of Physicists in Medicine (AAPM), Virtual, July 2021.

- "*A Practical Model for Equilibrium Dose Measurement*". K Grizzard, D Vergara, J Moroz, M Hoerner, Radiation Dose in Computed Tomography Session, Oral Presentation, Annual Meeting, American Association of Physicists in Medicine (AAPM), Virtual, Radiation Dose in Computed Tomography Session, Oral Presentation, July 2020.

- Mustafa A, Revzin M, Hoerner M, Langdon J, Vergara D. Ultrasound Image Acquisition and Doppler Ultrasound (2020). RSNA/AAPM Online Physics Modules. 2nd Edition. http://www.rsna.org/Physics-Modules/ or http://www.aapm.org/education/webbasedmodules.asp. Released April 8, 2020.

- "*Description and Validation of An Acquisition-Specific Parameterized Approach to Peak Skin Dose Calculation for Fluoroscopy Guided Interventional Procedures*". Vergara D, Hoerner M, Mustafa A, General e-Poster Discussion Session, Annual Meeting, American Association of Physicists in Medicine (AAPM), San Antonio, TX– July 2019.

- "*Effect of Angulation and Table Position On Patient Peak Skin Dose (PSD) Evaluations From Fluoroscopy-Guided Interventional Procedures (FGIPs)*" Hoerner M, Vergara D, Mustafa A, General e-Poster Session, Annual Meeting, American Association of Physicists in Medicine (AAPM), San Antonio, TX– July 2019.

- "*A comparison between NCRP-147 and calculated unshielded secondary air kerma parameters for CT scanners in an outpatient clinic*". Vergara D, Yester M, General e-Poster Discussion Session, Annual Meeting, American Association of Physicists in Medicine (AAPM), Nashville, TN – July 2018.

- *"Optimizing Infant Osseous Survey Techniques for a Digital Radiography Portable,"* Loretta M. Johnson, PhD | **Daniel Vergara, MS** | Ramses Herrera, RSNA 2017 SSC14-07. Oral presentation, Radiological Society of North America (RSNA) Annual Meeting, Chicago, IL – November 2017.

- *"Altering Neonatal Radiographic Examination Protocols to Accommodate SID,"* **Vergara D**, Herrera R, Johnson L. Med Phys 2017 44(6). Oral presentation, American Association of Physicists in Medicine (AAPM) Annual Meeting, Denver, CO – August 2017.

- *"Education leads to higher compliance: development and implementation of new neonatal technique charts for digital radiography,"* Herrera R, **Vergara D**, Johnson L. Med Phys 2017 44(6). Oral presentation, American Association of Physicists in Medicine (AAPM) Annual Meeting, Denver, CO – August 2017.

- *"A comparison between NCRP-147 workload values and calculated workload values for a large collimation CT scanner in an ED,"* **Vergara D**, Yester M. Med Phys 2017 44(6). e-poster, American Association of Physicists in Medicine (AAPM) Annual Meeting, Denver, CO – August 2017.

- "*How to choose detectors for small field dosimetry,*" **Vergara D**. Oral presentation, Winter Institute for Medical Physics (WIMP) 2015 – Breckenridge, CO (February 2015).

- *"Theory and Clinical Application of ArcCHECK, 3DVH and SunPoint Diode Detectors*," **Vergara D**. Oral presentation, Congreso Nacional de Física Medica 2013 – México, México D.F., México (November 2013).

- "*Utilization of LAP Aquarius Phantom for Laser Alignment and MRI Geometric Distortion Verification for Stereotactic Radiation Surgery Patient Simulation,"* **Vergara D**, Shang C, Ouhib Z, Schramm A, Leventouri T. Oral presentation, LAP of America, Inc., Boyton Beach, FL – April 2012.

- "*MRI Geometric Distortion Verification for Stereotactic Radiation Surgery Patient Simulation,"* **Vergara D**, Shang C, Ouhib Z,

Schramm A, Leventouri T. Poster presentation, Graduate Research Day, FAU, Boca Raton, FL, March 2012.

- "*A Characterization of the LAP Aquarius Phantom for External LAP Laser Alignment and Magnetic Resonance Geometric Distortion Verification for Stereotactic Radiation Surgery Patient Simulation,"* **Vergara D**, Shang C, Ouhib Z, Schramm A, Leventouri T. Poster presentation, College of Science Research Day, FAU, Boca Raton, FL, March 2012.

- M.S. Thesis: "*A Characterization of the LAP Aquarius Phantom for External LAP Laser Alignment and Magnetic Resonance Geometric Distortion Verification for Stereotactic Radiation Surgery Patient Simulation,"*, **Vergara D**, Shang C (Advisor), Ouhib Z, Schramm A, Leventouri T. Poster presentation, FAU, Boca Raton, FL, May 2012.

- "*Measuring Glucose Levels In Blood Equivalent Solution Using Micro-Raman Spectroscopy*," **Vergara D**, Kreymerman G, Oral presentation, Optics Seminar, Florida Atlantic University, Boca Raton, FL - April 2010.