# Noah Bice

## EDUCATION AND TRAINING

**New York University Langone Health** **2021 - 2023**
Medical Physics Residency *New York, NY*

**University of Texas Health San Antonio** **2017 - 2021**
Doctor of Philosophy in Medical Physics *San Antonio, TX*
Thesis Title: *Latent Space Arc Therapy Optimization*

**University of Texas at Austin** **2014 - 2017**
Bachelor of Science, Physics *Austin, TX*
*cum laude*, GPA: 3.83

## PROFESSIONAL MEMBERSHIPS AND CERTIFICATIONS

**Diplomate of the American Board of Radiology** **2024 - Present**
*Therapeutic Medical Physics*

**American Association of Physicists in Medicine** **2019 - Present**
*Full Member*

**TensorFlow Developer Certification** **2020 - 2023**
*Certificate ID 22999469*

## HONORS AND AWARDS

**Sal Vacirca Young Investigator Symposium Finalist** **2022**
"Probabilistic interpretation of a single-isocenter multi-target robustness analysis."
*Radiological and Medical Physics Society of New York*

**John R. Cameron Early-Career Investigator Symposium Finalist** **2021**
"Latent Space Arc Therapy Optimization."
*AAPM National Conference*

**Julio C. Palmaz Endowment for Excellence in Radiology Research** **2020**
*UT Health San Antonio*

**College of Natural Sciences College Scholar Award** **2016, 2017**
*University of Texas at Austin*

**Baumberger Endowment** **2014 - 2017**
*Baumberger Endowment Scholarship Foundation*

**Rocco C. Caffarelli Scholarship** **2014 - 2017**
*Frost Bank*

**College of Natural Sciences Scholarship** **2014 - 2017**
*University of Texas at Austin*

## CLINICAL EXPERIENCE

**Texas Oncology, San Marcos** **2023 - Present**
*Medical Physicist*

Overview

- Oversaw the clinical use of one Varian TrueBeam linear accelerator and one GE Discovery RT CT scanner as a single onsite physicist
- Responsible for machine troubleshooting, quality assurance measurements, physics equipment calibration and maintenance
- Lead multi-disciplinary Continuing Quality Improvement committee meetings to discuss incident learning system entries, patient feedback, and new clinical technology
- Oversaw radiation safety training and personnel dosimetery under the supervision of an offsite RSO
- Performed *in vivo* dosimetry, biological dose summations, implanted electronic device risk analyses, stereotactic treatment planning and supervision
- Provided supplemental clinical coverage at our South Austin site, including HDR and TBI planning and treatment
- Oversaw our clinic's transition between radiation oncology information systems from MOSAIQ to ARIA
- Oversaw initial APEx accreditation as a satellite facility
- Responsible for VisionRT installation, acceptance, and commissioning per TG-302

**NYU Langone Health** **2021 - 2023**
*Medical Physics Resident*

Overview

- Assisted in the clinical use of 3 Siemens Somatom Definitions, 5 TrueBeams, 1 Edge, 1 VariSource iX afterloader, 1 Gamma Knife Icon, and I-125 for permanent interstitial prostate implants, all under the supervision of a Qualified Medical Physicist
- Completed rotations in radiation protection and shielding, CT simulation, treatment planning, CyberKnife (Winthrop University Hospital), proton therapy (New York Proton Center, Varian ProBeam), Gamma Knife, brachytherapy, professionalism and ethics, and clinical support (physicist of the day)
- Participated in the commissioning of new technology and automation of routine clinical tasks
- Attended physics didactics, radiation biology didactics, TG report didactics, and departmental journal clubs

Clinical Projects

- Member of single-isocenter multi-target SRS commissioning team – beam model tuning, development of an automated planning script, robustness analysis, IROC audit
- Created a program to recommend electron energy-bolus combinations based on target depth
- Member of RADformation AutoContour commissioning team – part of this work was recognized by the vendor and developed into a "case study" (https://tinyurl.com/AC-case-study)
- Created an XML script to run an SNC single-isocenter multi-target Winston-Lutz test in Developer mode
- Created a program to read, display, and analyze time-resolved electrometer data for automated Gamma Knife profile analysis (SNC PC Electrometer, PTW MicroDiamond) (https://tinyurl.com/gk-profiles)

**UT Health San Antonio** **2017 - 2021**
*Graduate Research Assistant*

Overview

- Observed daily, monthly, and annual QA for 3 Elekta Versa HDs and 1 Varian Novalis Tx
- 8-month rotation of independent patient-specific QA with PTW Octavius 4D array
- 1-year treatment planning course covering 3D CRT, IMRT, and VMAT planning for various anatomical sites using Pinnacle$^3$ TPS

## RESEARCH EXPERIENCE

**Medical Physics Resident** **2021 - 2023**
*Supervised by Sunshine Osterman, Ph.D.*

As a resident, I developed interests in robust optimization and evaluation, linac-based SRS, and the ethical use of artificial intelligence systems in medicine. During this period, I shared an invited talk at the APIBQ Annual Conference with Dr. Sunshine Osterman on ethics and AI in radiology and radiation oncology.

**Graduate Research Assistant** **2017 - 2021**
*Supervised by Neil Kirby, Ph.D., and Mohamad Fakhreddine, M.D.*

My work with Drs. Kirby and Fakhreddine was towards the development deep learning applications in radiation oncology. We investigated prognosis prediction in patients with brain metastasis, deformable image registration error prediction, uncertainties in AI-based automatic segmentation, and VMAT optimization in deep-learned low-dimensional spaces.

**Freshman Research Initiative** **2014 - 2015**
*Supervised by Ronald Hadani, Ph.D.*

UT Austin supports the involvement of first-year undergraduates in research through the Freshman Research Initiative program. During this year, selected students take a research methods course followed by a semester of involvement in a laboratory. I spent my second semester in the abstract algebra laboratory under Dr. Hadani.

## TEACHING EXPERIENCE

**Texas State University** **2024 - Present**
*Adjunct Professor*

- Instructor for one 3-hour physics course per semester for the Texas State RTT undergraduate program beginning in the Fall of 2024

**NYU Radiation Oncology Physics** **2022**
*Guest Lecturer*

- Responsible for four lectures on atomic structure, radioactive decay, and computerized treatment planning

**Programming in Medical Physics** **2020**
*Guest Lecturer*

- Authored a set of Python lecture notes (https://tinyurl.com/physpynotes) to compliment UT Health's medical physics programming class, which focuses mainly on MATLAB
- Responsible for one lecture on deep learning with TensorFlow/Keras

**Introduction to Radiation Dosimetry** **2019 - 2020**
*Guest Lecturer*

- Responsible for five lectures (https://tinyurl.com/attixnotes) on radiation dosimetry regarding scattering in classical electrodynamics, photon interactions in radiotherapy, cavity theories, and reference dosimetry according to TG-21 and TG-51

**Northside Independent School District** **2017 - 2018**
*Substitute Teacher*

- Employed as a substitute teacher at San Antonio high schools teaching math and science courses

## OTHER PROFESSIONAL EXPERIENCE

**Peer Review for Academic Journals**
https://tinyurl.com/BiceN-WoS

- *Physics in Medicine & Biology*
- *Medical Physics*
- *Scientific Reports*
- *Quantitative Imaging in Medicine and Surgery*

**Medical Physics Leadership Academy (MLPA) Journal Club** **2022 - 2023**
*Participant*

**UT Health NIH F-Grant Writing Workshop** **2019**
*Participant*

## PEER-REVIEWED PUBLICATIONS

1. **N. Bice**, M. Fakhreddine, R. Li, D. Nguyen, C. Kabat, P. Myers, N. Papanikolaou, and N. Kirby. "Latent Space Arc Therapy Optimization." *Physics in Medicine and Biology.* August, 2021. https://doi.org/10.1088/1361-6560/ac1b1c.

2. **N. Bice**, N. Kirby, R. Li, D. Nguyen, T. Bahr, C. Kabat, P. Myers, N. Papanikolaou, and M. Fakhreddine. "A sensitivity analysis of probability maps in deep-learning-based anatomical segmentation." *Journal of Applied Clinical Medical Physics.* July, 2021. https://doi.org/10.1002/acm2.13331.

3. **N. Bice**, N. Kirby, T. Bahr, K. Rasmussen, T. Wagner, N. Papanikolaou, and M. Fakhreddine. "Deep learning based survival analysis for brain metastasis patients with the national cancer database." *Journal of Applied Clinical Medical Physics.* August, 2020. http://dx.doi.org/10.1002/acm2.12995.

4. R. Li, A. Roy, **N. Bice**, and N. Kirby, N. Papanikolaou. "Managing tumor changes during radiotherapy using a deep learning model." *Medical Physics.* May, 2021. https://doi.org/10.1002/mp.14925.

## ORAL PRESENTATIONS

1. **N. Bice***. "Principles of Inverse Planning." Global Medical Physics Education Series, RAD-AID International. https://youtu.be/WwU-MEtRutU.
2. K. S. Osterman* and **N. Bice*.** "Ethics and Artificial Intelligence in Radiation Oncology and Radiology." Association des Physiciens et Ingénieurs Biomédicaux du Québec (APIBQ), Congrès 2022. https://tinyurl.com/APIBQ-ethics.
3. **N. Bice***, J. Xue, K. S. Osterman, D. Barbee, P. Galavis, T. Qu, and J. Teruel. AAPM 2022 MO-G-202-5: "Probabilistic interpretation of a cranial single-isocenter multi-target robustness analysis." https://tinyurl.com/simt-robustness.
4. **N. Bice***, M. Fakhreddine, D. Nguyen, C. Kabat, P. Myers, N. Papanikolaou, and N. Kirby. AAPM 2021 Early-Career Investigator Symposium MO-EF-TRACK 4-7: "Latent Space Arc Therapy Optimization." https://tinyurl.com/lsat-ecis.
5. R. Li*, A. Roy, **N. Bice**, S. Sivabhaskar, M. Fakhreddine and N. Papanikolaou. AAPM 2021 SU-B-TRACK: "Managing Tumor Changes During Fractionated Radiotherapy: Evaluation On a Deep-Learning-Based Predictive Model and a Re-Planning Strategy." https://tinyurl.com/tumor-changes.
6. **N. Bice***, N. Kirby, T. Bahr, J. Rembish, M. Agarwal, S. Stathakis, and M. Fakhreddine. AAPM 2020 MO-F-TRACK 2-03: "Intensity-based thresholding of probability maps in deep-learning-based segmentation." *Medical Physics.* 2020; 47(6): E302. https://tinyurl.com/thresholding
7. **N. Bice***, N. Kirby, and M. Fakhreddine. AAPM 2019 : "Deep-Learning Based Survival Analysis of the NCDB Brain Metastasis Dataset." https://tinyurl.com/aapmabstracts2019

## SCIENTIFIC ABSTRACTS

1. T. Qu, H. Wang, **N. Bice**, J. Rembish, M. Serrano Sosa. "Introducing a method to use an electrometer's time-series data logger to measure a beam profile efficiently." Radiosurgery Society, 2023 Annual Meeting. https://tinyurl.com/GK-RSS23.
2. **N. Bice***, B. Patel, P. Milien, A. McCarthy, P. Cheng, J. Rembish, J. Teruel, and D. Barbee. AAPM 2022 *Blue Ribbon ePoster*: "Statistical evaluation of a commercial deep-learning-based automatic contouring software." https://tinyurl.com/autocontour-eval
3. J. Teruel, J. Xue, **N. Bice**, P. Galavis*, M. Malin, A. Rea, T. Daniels, and D. Barbee. AAPM 2022 TU-D1000-IePD-F4-5: "Automated treatment planning framework for single-isocenter multi-target (SIMT) cranial SRS treatments." https://tinyurl.com/simt-autoplanning
4. J. Rembish*, S. Taneja, K. S. Osterman, **N. Bice**, J. Teruel, and D. Barbee. AAPM 2022 MO-H345-IePD-F3-4: "Comparing ArcCHECK and portal dosimetry gamma index scores for VMAT TBI." https://tinyurl.com/vmat-tbi-qa.
5. J. Xue*, J. Teruel, **N. Bice**, P. Galavis, M. Malin, A. Rea, and D. Barbee. AAPM 2022 PO-GePV-T-368: "Validation of a beam model for single isocenter multi-mets treatment using SRS MapCHECK." https://tinyurl.com/srs-mapcheck.
6. V. Bry*, **N. Bice**, N. Kirby, D. Saenz, N. Papanikolaou, and K. Rasmussen. AAPM 2021 WE-IePD-TRACK: "Design and testing of a novel phantom for camera calibration of skin tones with SGRT." https://tinyurl.com/vb-skin-tones.
7. J. Rembish*, P. Myers, C. Kabat, **N. Bice**, K. Rasmussen, D. Saenz, N. Papanikolaou, and S. Stathakis. AAPM 2021 PO-GePV-T-156: "Development of an automated pre-treatment plan evaluation." https://tinyurl.com/ptplan-eval.
8. **N. Bice***, N. Kirby, R. Li, C. Kabat, D. Nguyen, N. Papanikolaou, and M. Fakhreddine. AAPM 2020 PO-GeP-T-559:"Learning the plausible VMAT subspace with deep autoencoders." *Medical Physics.* 2020; 47(6): E809. https://tinyurl.com/vmat-subspace.
9. R. Li*, A. Das, **N. Bice**, P. Rad, A. Roy, N. Kirby, and N. Papanikolaou. AAPM 2020 *Blue Ribbon ePoster*: "A depthwise separable convolution neural network for survival prediction in head and neck cancer." https://tinyurl.com/depthsep
10. J. Rembish*, **N. Bice**, C. Kabat, S. Stathakis, N. Papanikolaou, and P. Myers. AAPM 2020 PO-GeP-T-292: "Development of an automated pre-treatment data-transfer evaluation." https://tinyurl.com/transfercheck.
11. J. Rembish*, P. Myers, K. Rasmussen, N. Kirby, D. Saenz, P. Mavroidis, N. Papanikolaou, C. Kabat, **N. Bice**, and S. Stathakis. AAPM 2019: "Developing an automated method for pre-treatment data transfer checks." https://tinyurl.com/aapmabstracts2019.

## REFERENCES

Available upon request