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## Dr. Magdalena Bazalova

Correspondence language: English Sex: Female Date of Birth: 7/11 Canadian Residency Status: Canadian Citizen Country of Citizenship: Canada, Czechia

## **Contact Information**

The primary information is denoted by (\*)

#### Address

<u>Mailing</u> (\*) PO Box 1700 STN CSC Victoria British Columbia V8W 2Y2 Canada

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# Dr. Magdalena Bazalova

## Degrees

 2005/1 - 2009/5 Doctorate, PhD in Medical Physics, McGill University Degree Status: Completed
 1998/9 - 2003/6 Master's Equivalent, MSc in Dosimetry, Czech Technical University Degree Status: Completed

## **Credentials**

2015/5 - 2025/4 Diplomate of the American Board of Radiology (DABR), American Board of Radiology

## **Recognitions**

2023/10	College of New Scholars, Artists and Scientists Royal Society of Canada
2021/9	Science Research Excellence Award 2021 University of Victoria
2020/7 - 2025/6	Canada Research Chair in Medical Physics (Tier 2) Natural Sciences and Engineering Research Council of Canada (NSERC)
2018/7	John S. Laughlin Young Scientist Award American Association of Physicists in Medicine
2016/6	The best publication in Radiological Physics Czech Association of Medical Physicists

## **Employment**

2021/7	Associate Professor and Canada Research Chair in Medical Physics Physics and Astronomy, Science, University of Victoria
2021/1 - 2023/12	Deputy Editor American Association of Physicists in Medicine
2022/9 - 2023/8	Consultant Tibaray, Inc
2015/7 - 2021/6	Assistant Professor and Canada Research Chair in Medical Physics Physics and Astronomy, Faculty of Science, University of Victoria
2011/1 - 2015/5	Instructor Radiation Oncology, School of Medicine, Stanford University

2013/9 - 2014/8	Consultant Fibralign Corporation
2009/1 - 2011/12	Postdoctoral fellow Radiation Oncology, School of Medicine, Stanford University
2010/1 - 2010/12	Consultant Sirius Medicine LLC
2010/1 - 2010/5	Consultant Caliper Life Sciences
2008/10 - 2008/12	Postdoctoral fellow Medical Physics, McGill University Health Centre, McGill University Health Centre

## Affiliations

The primary affiliation is denoted by (\*)

(\*) 2015/7 Assistant Professor and Canada Research Chair in Medical Physics (Tier 2), University of Victoria

## Leaves of Absence and Impact on Research

2017/3 - 2017/12 Parental, University of Victoria I was on maternity leave for 10 months in 2017. While I enjoyed the time off with my baby, my maternity slowed down my research productivity.

## **Research Funding History**

Awarded [n=10]	
2021/4 - 2026/3 Principal Investigator	Facilitation of ultRahigh dOse-rate aNd spaTlally-fractionatEd Radiotherapy (FRONTIER)
	Funding Sources: Natural Sciences and Engineering Research Council of Canada (NSERC) Discovery Grant Total Funding - 250,000 Funding Competitive?: Yes
2022/9 - 2025/8 Principal Applicant	PANACEA: aPplication of Artificial iNtelligence in spectrAl photon-Counting computEd tomogrAphy
	Funding Sources: Natural Sciences and Engineering Research Council of Canada (NSERC) Alliance Missions Total Funding - 538,000 Funding Competitive?: Yes
	Co-investigator : Pierre-Antoine Rodesch
2020/7 - 2025/6 Principal Investigator	Canada Research Chair
	Funding Sources: Canada Research Chairs (CRC) Canada Research Chair Total Funding - 500,000 Funding Competitive?: Yes
2021/4 - 2024/3	Facilitation of ultRahigh dOse-rate aNd spaTlally-fractionatEd Radiotherapy (FRONTIER)

Principal Investigator

	Funding Sources: Natural Sciences and Engineering Research Council of Canada (NSERC) Discovery Accelerator Supplement Total Funding - 120,000 Funding Competitive?: Yes
2022/10 - 2023/9	Bringing x-ray ultrahigh-dose rate (FLASH) radiotherapy into the clinic
Principal Applicant	Funding Sources: Tibaray, Inc Research Grant Total Funding - 220,000 Funding Competitive?: No
2021/1 - 2021/12 Co-applicant	Addressing challenges in tumor imaging: novel X-ray detectors offering a submicron spatial resolution
	Funding Sources: University of Victoria Collaborative Health Grant Total Funding - 34,000 Funding Competitive?: Yes
2020/8 - 2021/7 Principal Investigator	Advanced x-ray imaging for food and baggage inspection
	Funding Sources: Natural Sciences and Engineering Research Council of Canada (NSERC) Alliance Total Funding - 225,000 Funding Competitive?: Yes
2016/6 - 2021/5	Tackling physics challenges of conformal small animal image guided radiotherapy
Principal Investigator	Funding Sources: Natural Sciences and Engineering Research Council of Canada (NSERC) Discovery Grant Total Funding - 160,000 Funding Competitive?: Yes
2017/4 - 2021/3	Polymer Nanoparticles for Drug Delivery
Co-applicant	Funding Sources: Natural Sciences and Engineering Research Council of Canada (NSERC) CREATE Total Funding - 3,000,000 Funding Competitive?: Yes
	Co-applicant : Christine Allen; Jeremy Wulff; John Oh; Marc-Andre Fortin; Raymond Reilly;
	Principal Investigator : Cornelia Bohne; Matt Moffitt
2019/4 - 2021/3	Towards cancer radiotherapy with no side effects
Principal Investigator	Funding Sources: Tri-agency research council of Canada New Frontiers in Research Fund (NFRF)-Exploration Total Funding - 240,000 Funding Competitive?: Yes

#### Completed [n=1]

2015/7 - 2020/6 Principal Applicant Canada Research Chair

Funding Sources: Canada Research Chairs (CRC) Canada Research Chair Total Funding - 500,000 Funding Competitive?: Yes

# **Publications**

### **Journal Articles**

- Rodesch P-A, Richtsmeier D, Murphy K, K Iniewski and Bazalova-Carter M. (2024). Photon-counting detector step-wedge calibration enabling water and iodine material decomposition. JINST. 1: 1-10. Published Refereed?: Yes
- Ren Y, Haruta Y, Dayneko S, Tao J, Zhang D, Yeddu V, Bazalova-Carter M, Saidaminov M. (2024). Surface Chemistry of Solution-Grown CsPbBr3 Single Crystals and its Selective Cleaning for Linear-Responsive X-ray Detectors. ACS Materials Letters. 6: 3763–3769.
- O'Connell J, Weil MD, Bazalova-Carter M. (2024). Non-coplanar lung SABR treatments delivered with a gantry-mounted x-ray tube. Phys Med Biol. 1: 1-10. Published Refereed?: Yes
- Frencken AL, Richtsmeier D, Leonard RL, Williams AG, Johnson CE, Johnson JA, Blasiak B, Orlef A, Skorupa A, Solkoł M, Tomanek B, Beckham W, Bazalova-Carter M, van Veggel FCJM,. (2024). X-ray Sensitive Doped CaF2-Based MRI Contrast Agents for Local Radiation Dose Measurement. ACS Appl. Mater. Interfaces. 1: 1-10. Published Refereed?: Yes
- Masella O, Murphy K, Bazalova-Carter M. (2024). Characterization of a new low-dose and low-energy Gafchromic film LD-V. JACMP. 15: 1-12. In Press
- 6. Moazzezi, P, Yeddu V, Dayneko S, Haruta Y, Kokaba MR, Richtsmeier D, Ahmed Y, Amaro A, Bazalova-Carter M Navarrete-López A, Saidaminov M. (2024). Kinetics of Space-Confined Inverse Temperature Crystallization: Gradients Enlarge Thin Perovskite Single Crystals. ACS Materials Letters. 6: 3557–3563.
- Richtsmeier D, Rodesch P-A, K Iniewski and Bazalova-Carter M. (2024). Material decomposition with a prototype photon-counting detector CT system: expanding a stoichiometric dual-energy CT method via energy bin optimization and K-edge imaging. Phys Med Biol. 1: 1-10. Published Refereed?: Yes
- Clements N, Bazalova-Carter M. (2024). Monte Carlo calculated absorbed-dose energy dependence of EBT3 and EBT4 films for 5-200 MeV electrons and 100 keV-15 MeV photons, *JACMP* 2024 (accepted).. JACMP. 15: 1-10. In Press

- Esplen N, Egoriti L, Planche T, R\u00e4del S, Koay H-W, Humphries B, Ren X, Ford N, Hoehr C, Gottberg A, Bazalova-Carter M. (2024). Dosimetric characterization of a novel UHDR megavoltage x-ray source for FLASH radiobiological experiments. Sci Rep. 1: 1-10. Published Refereed?: Yes
- 10. Fischer J, Whitmore L, Sheehy S, DesRosiers C, Bazalova-Carter M. (2024). Very high-energy electrons as radiotherapy opportunity. EPJ Plus. 139: 1-15.
- Clements N, Esplen N, Bateman J, Dosanjh M, Korysko P, Farabolini W, Corsini R, Bazalova-Carter M. (2024). Mini-GRID radiotherapy on the CLEAR very-high-energy electron beamline: collimator optimization, film dosimetry, and Monte Carlo simulations. Phys Med Biol. 1: 1-10. Published Refereed?: Yes
- 12. Deng X , Richtsmeier D, Rodesch P-A, K Iniewski and Bazalova-Carter M. (2024). Simultaneous iodine and barium imaging with photon-counting CT. Phys Med Biol. 69: 195004.
- Hart A, Giguère C, Bateman J, Korysko P, Farabolini W, Rieker V, Esplen N, Corsini R, Dosanjh M, Beaulieu L, Bazalova-Carter M. (2024). Plastic scintillator dosimetry of ultrahigh dose-rate 200 MeV electrons at CLEAR. IEEE Sensors. 1: 1-10. Published Refereed?: Yes
- Hart A, Dudzic JP, Clarke JW, Eby J, Perlman SJ, Bazalova-Carter M. (2024). High-throughput, low-cost FLASH: Irradiation of Drosophila melanogaster with low-energy X-rays using time structures spanning conventional and ultrahigh dose-rates. J Radiat Res. 65: 1-12. Accepted
- Richtsmeier D, O'Connell J. Rodesch P-A, K Iniewski and Bazalova-Carter M. (2023). Metal artifact correction in photon-counting detector CT: metal trace replacement using high-energy data. Med Phys. 49: 380-396.
   Accepted Refereed?: Yes
- Laidlaw J, Earl N, Shavdia N, Davis R, Mayer S, Karaman D, Rodesch P-A, Richtsmeier D, Bazalova-Carter M. (2023). Design and CT imaging of Casper, an anthropomorphic breathing thorax phantom. BPEX. 1: 025008. Published Refereed?: Yes
- Clements N, Esplen N, Bazalova-Carter M, (2023). A feasibility study of ultra-high dose rate mini-GRID therapy using very high-energy electron beams for a simulated pediatric brain case. Phys Med. 1: 1-10. Published Refereed?: Yes
- Haruta Y, Huber P, Hart A, Bazalova-Carter M, Saidaminov M. (2023). The Effect of Air Ionization in Testing Perovskite-based Direct Conversion X-ray Detectors. ACS Energy Letters. 1: 1-10. Published Refereed?: Yes
- Ren X, Egoriti L, Esplen N, R\u00e4del S, Humphries B, Koay H-W, Planche T, Hoehr C, Gottberg A, Bazalova-Carter M, Ford N. (2023). Using in vivo respiratory-gated micro-computed tomography imaging to monitor pulmonary side effects in 10 MV FLASH and conventional radiotherapy. Medical Imaging 2023: Biomedical Applications in Molecular, Structural, and Functional Imaging (conference proceedings). 1: 1-10. Published Refereed?: Yes

- Rodesch P-A, Richtsmeier D, Iniewski K, Bazalova-Carter M,. (2023). Comparison of threshold energy calibrations of a photon-counting detector and impact on CT reconstruction. IEEE TRPMS. 1: 263-272. Published Refereed?: Yes
- O'Connell J, Kundu S, Saidaminov M, Bazalova-Carter M. (2023). Next Generation High Resolution Perovskite Direct Conversion Detector: Monte Carlo Design Optimisation and Virtual Clinical Trial. Phys Med Biol. 1: 025016. Published Refereed?: Yes
- Johnstone C and Bazalova-Carter M. (2023). A review of small animal dosimetry techniques: image-guided and spatially-fractionated therapy. Journal of Physics: Conference Series. 1: 1-20. Published Refereed?: Yes
- O'Briain T, Uribe C, Sechopoulos I, Bazalova-Carter M. (2023). Publicly available framework for simulating and experimentally validating clinical PET systems. Med Phys. 50: 1549-1559. Published Refereed?: Yes
- Zou W, Zhang R, Schueler E, Taylor PA, Mascia AE, Diffenderfer ES, Zhao T, Ayan AS, Sharma M, Yu S-J, Lu W, Bosch WR, Tsien C, Surucu M, M Pollard-Larkin JM, Schuemann J, G Moros EG, Bazalova-Carter M, Gladstone DJ, Li H, B Simone CB, Petersson K, F Kry SF, Maity A, Loo BW, Dong L, G Maxim PG, Xiao Y. (2023). Framework for Quality Assurance of Ultra-High Dose Rate Clinical Trials Investigating FLASH Effects and Current Technology Gaps. IJROBP. 1: 1-10. Accepted Refereed?: Yes
- Richtsmeier D, Rodesch P-A, Siu W, Iniewski K, Bazalova-Carter M. (2023). The feasibility of accurate stent visualization with photon-counting detector CT and K-edge imaging. IEEE TRPMS. 1: 1-10. Accepted

Refereed?: Yes

- Timakova E, Bazalova-Carter M, Zavgorodni S. (2023). Characterization of a 0.8 mm3 Medscint plastic scintillator detector system for small field dosimetry. Phys Med Biol. 1: 1-9. Published Refereed?: Yes
- Hart A, Cecchi D, Giguere C, Larose F, Therriault-Proulx F, Esplen N, Beaulieu L, Bazalova-Carter M. (2022). Lead-doped scintillator dosimeters for detection of ultrahigh dose-rate x-rays. Phys Med Biol. 67: 105007. Published Refereed?: Yes
- Clements N, Bazalova-Carter M, Esplen N. (2022). Monte Carlo optimization of a GRID collimator for preclinical megavoltage ultra high dose-rate spatially-fractionated radiation therapy. Phys Med Biol. 67: 185001.
   Published Refereed?: Yes
- Mahuvava C, Esplen N, Poirier Y, Kry SF, Bazalova-Carter M, (2022). Dose calculations for pre-clinical radiobiology experiments conducted with single-field cabinet irradiators. Medical Physics. 49: 1911-1923. Published Refereed?: Yes

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- Nguyen J, Richtsmeier D, K Iniewski and Bazalova-Carter M. (2022). Contaminant Detection using a CZT photon counting detector with TDI image reconstruction. JINST. 17: P05010. Published Refereed?: Yes
- Shaharuddin S, Hart A, Bazalova-Carter M, Beaulieu L, Giguere C, Kleefeld C, and Foley MJ. (2022). Evaluation of scintillation detectors for ultrahigh dose-rate x-ray beam dosimetry. Proc. SPIE 2022 (conference proceedings). 1: 170-177. Published Refereed?: Yes
- Esplen N, Egoriti L, Palley B, Planche T, Hoehr C, Gottberg A, and Bazalova-Carter M. (2022). Design optimization of an electron-to-photon conversion target for ultra-high dose rate x-ray (FLASH) experiments at TRIUMF. Phys Med Biol. 67: 1-18. In Press Refereed?: Yes
- O'Connell J and Bazalova-Carter M. (2022). Investigation of image quality of MV and kV CBCT with low-Z beams and high DQE detector. Medical Physics. 49: 6781-6799.
   Published Refereed?: Yes
- Montay-Gruel PG, Corde S, Laissue JA, and Bazalova-Carter M. (2022). FLASH radiotherapy with photon beams. Medical Physics. 49: 2055-2067. Published Refereed?: Yes
- Kundu S, Richtsmeier D, Hart A, Vozny A, Bazalova-Carter M, Saidamov M. (2022). Orthorhombic Nonperovskite CsPbI3 Microwires for Stable High-Resolution X-ray Detectors. Adv Opt Mater. 10: 2200516. Published Refereed?: Yes
- Kundu S\*, O'Connell J\*, Hart A\*, Richtsmeier D, Bazalova-Carter M, Saidaminov M. (2022). Halide Perovskites for Direct Conversion Megavoltage X-Ray Detectors. Adv Electron Mater. 1: 2200640. Published Refereed?: Yes
- Kundu S\*, O'Connell J\*, Hart A\*, Richtsmeier D, Bazalova-Carter M, Saidamov M. (2022). Perovskite Single Crystals for Megavoltage X-ray Imaging. Adv Electron Mater. 8: 1-20. Accepted Refereed?: Yes
- Stalbaum T, Partain L, Weil MD, Kim J, Han JY, Plies MJ, Chen H, Ziskin V, Bazalova-Carter M, Song S, Rand R, Boyd D. (2021). Dosimetry of a novel converging x-ray source for kilovoltage radiotherapy. Medical Physics. 48: 5947-5958. Published Refereed?: Yes
- Nguyen J\*, Rodesch P-A\*, Richtsmeier D\*, K Iniewski and Bazalova-Carter M,. (2021). Optimization of a CZT photon counting detector for contaminant detection. JINST. 16: P11015.
   Published Refereed?: Yes
- Dennis E, Burlakov V, Huang J, Kundu S, Thrithamarassery GD, Richtsmeier D, Bazalova-Carter M, Leitch D, Saidaminov M. (2021). High length-to-width aspect ratio lead halide microwires via perovskite-induced local concentration gradient for X-ray detection. Cryst Eng Comm. 23: 2215-2221. Published Refereed?: Yes

- O'Connell J, Lindsay C, and Bazalova-Carter M. (2021). Experimental validation of Fastcat kV and MV cone beam CT (CBCT) simulator. Medical Physics. 48: 6869-6880. Published Refereed?: Yes
- 42. Tanguay J, Richtsmeier D, Dydula C, Day JA, Iniewski K, and Bazalova-Carter M. (2021). A Detective Quantum Efficiency for Spectroscopic X-ray Imaging Detectors. Medical Physics. 48: 4668-4669. Published Refereed?: Yes
- 43. O'Connell J and Bazalova-Carter M. (2021). FastCAT: Fast Cone Beam CT (CBCT) Simulation. Medical Physics. 47: 4448-4458.
   Published Refereed?: Yes
- Kandel R, Webster M, Hart A\*, Poushimin R, Nikniazi A, Nunzi J-M, Bazalova-Carter M, Wang P. (2021). Single Crystal Bismuth Thiophosphate, BiPS4, as a Non-Toxic and Mechanically Robust X-ray Detector. ACS Appl Mater Interfaces. 13: 56296-56301. Published Refereed?: Yes
- Cecchi DD, Therriault-Proulx F, Lambert-Girard S, Hart A, Macdonald A, Pfleger M, Lenckowski M, and Bazalova-Carter M. (2021). Characterization of an x-ray tube-based ultrahigh dose-rate system for in vitro irradiations. Medical Physics. 48: 7399-7409. Published Refereed?: Yes
- Richtsmeier D, Guliyev E, Iniewski K, Bazalova-Carter M. (2021). Contaminant detection in non-destructive testing using a CZT photoncounting detector. JINST. 2021: P01011.
   Published Refereed?: Yes
- 47. Breitkreutz DY\*, Weil MD, Bazalova-Carter M. (2020). External beam radiation therapy with kilovoltage x-rays. Physica Medica. 79: 103-112.
  Published
  Refereed?: Yes, Open Access?: No
- Poirier Y, Anvari A, Johnstone CD, Brodin NP, Dos Santos M, Bazalova-Carter M, Sawant A. (2020). A Failure Modes and Effects Analysis Quality Management Framework for Image-Guided Small Animal Irradiators : A Change in Paradigm for Radiation Biology. Medical Physics. 47: 2013-2022. Published Refereed?: Yes
- Esplen N\*, Mendonca M, Bazalova-Carter M. (2020). The Physics and Biology of ultrahigh dose-rate (FLASH) radiotherapy: A topical review. Physics in Medicine and Biology. 65: 23TR03. Published Refereed?: Yes, Open Access?: Yes
- Dunning C\* and Bazalova-Carter M. (2020). Design of a Combined X-ray Fluorescence Computed Tomography (CT) and Photon-Counting CT Table-top Imaging System. JINST. 2020: P06031. Published Refereed?: Yes
- O'Briain T\*, Moo K, Bazalova-Carter M. (2020). Technical Note: Synthesizing of Lung Tumors in Computed Tomography Images. Medical Physics. 47: 5070-5076. Published Refereed?: Yes

- 52. Curry CB, Dunning CAS\*, Gauthier M, Chou HGJ, Fiuza F, Glenn GD, Tsui Y, Bazalova-Carter M, Glenzer S. (2020). Optimization of radiochromic film stacks to diagnose high-flux laser-accelerated proton beams. Rev Sci Inst. 2020: 093303. Published Refereed?: Yes
- Richtsmeier D\*, Dunning CAS\*, Iniewski K, Bazalova-Carter M. (2020). Multi-contrast K-edge imaging on a 53. bench-top photon-counting CT system: Acquisition parameter study. JINST. 2020: P10029. Published Refereed?: Yes
- Dunning C\*, O'Connell J\*, Robinson S\*, Murphy K\*, Frencken A, Van Veggel F, Iniewski K, and Bazalova-54. Carter M. (2020). Photon-counting computed tomography of lanthanide contrast agents with a high-flux 330-µm pitch cadmium zinc telluride (CZT) detector in a table-top system. SPIE JMI. 2020: 033502. Published Refereed?: Yes
- Byrne K, Alharbi M, Esplen N\*, Woulfe P, O'Keeffe S, Bazalova-Carter M, Foley M,. (2020). Initial 55. evaluation of the performance of novel inorganic scintillating detectors for small animal irradiation dosimetry. IEEE Sensors. 20: 4704-4712. Published Refereed?: Yes
- Robinson S\*, Esplen N\*, Wells D, Bazalova-Carter M. (2020). Monte Carlo simulations of EBT3 film dose 56. deposition for percentage depth dose (PDD) curve evaluation. J Appl Clin Med Phys. 21: 314-324. Published

Refereed?: Yes, Open Access?: Yes

- Esplen N\*, Therriault-Proulx F, Beaulieu L and Bazalova-Carter M. (2019). Preclinical dose verification 57. using a 3D printed mouse phantom for radiobiology experiments. Medical Physics. 46: 5294-5303. Published Refereed?: Yes
- Breitkreutz DY\*, Bialek S\*, Vojnovic B, Kavanagh A, Johnstone CD\*, Rovner Z, Tsouchlos P, 58. Kanesalingam T, Bazalova-Carter M. (2019). A 3D-printed modular phantom for guality assurance of image-guided small animal irradiators: design, imaging experiments and Monte Carlo simulations. Medical Physics. 46: 2015-2024. Published
  - Refereed?: Yes
- Johnstone CD\*, Therriault-Proulx F, Beaulieu L, Bazalova-Carter M. (2019). Characterization of a plastic 59. scintillating detector for the Small Animal Radiation Research Platform (SARRP). Medical Physics. 46: 394-404. Published
  - Refereed?: Yes
- Dunning C\* and Bazalova-Carter M. (2019). X-ray Fluorescence Computed Tomography Induced by 60. Photon, Electron, and Proton Beams. IEEE Transactions on Medical Imaging. 38: 2735-2743. Published Refereed?: Yes
- O'Connell J\*, Murphy K\*, Robinson S\*, Iniewski K, and Bazalova-Carter M. (2019). Unsupervised Learning 61. Methods in X-ray Spectral Imaging Material Segmentation. Journal of Instrumentation. 14: P06022. Published Refereed?: Yes

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- Bazalova-Carter M and Esplen N\*. (2019). On the capabilities of conventional x-ray tubes to deliver ultrahigh (FLASH) dose rates. Medical Physics. 46: 5690-5695.
   Published Refereed?: Yes, Open Access?: Yes
- Lindsay C\*, Bazalova-Carter M, Wang A, Shedlock D, Wu M, Newson M\*, Xing L, Ansbacher W, Fahrig R, Star-Lack J. (2019). Investigation of combined kV/MV CBCT imaging with a high-DQE MV detector.Medical Physics. 46: 563-575. Published Refereed?: Yes
- 64. Esplen N\*, Alyaqoub E\*, Bazalova-Carter M. (2019). Manufacturing of a realistic mouse phantom for dosimetry of radiobiology experiments. Medical Physics. 46: 1030-1036.
   Published Refereed?: Yes
- 65. O'Connell J\*, Iniewski K and Bazalova-Carter M. (2019). Optimal Planar X-ray Imaging Soft TissueSegmentation Using a Photon Couning Detector. Journal of Instrumentation. 14: P01020. Published Refereed?: Yes
- 66. Shuhendler A Cui L Chen Z Shen B James ML Witney T Gambhir SS Chin FT Bazalova-Carter M Graves E Rao J. (2019). [18F]-SuPAR: A radiofluorinated probe for non-invasive imaging of DNA damage-dependent Poly (ADP-ribose) Polymerase Activity. Bioconjugate Chemistry. 35: 1331-1342. Published Refereed?: Yes
- Breitkreutz DY\*, Renaud MA, Weil MD, Zavogordni S, Han E, Baxter H\*, Seuntjens J, Song S, Boyd D, Bazalova-Carter M. (2019). Monte Carlo calculated kilovoltage x-ray arc therapy plans for three lung cancer patients. BPEX. 2019: 065022. Published Refereed?: Yes
- Sechopoulos I, Rogers DWO, Bazalova-Carter M, Bolch WE, Heath E, McNitt-Gray MF, Sempau J, and Williamson JF. (2018). RECORDS: improved Reporting of montE CarlO RaDiation transport Studies -Report of the AAPM Research Committee Task Group 268. Medical Physics. 45: e1-e5. Published Refereed?: Yes
- Esplen NM\*, Chergui L\*, Johnstone CD\*, Bazalova-Carter M. (2018). Monte Carlo optimization of a microbeam collimator design for use on the small animal radiation research platform (SARRP). Physics in Medicine and Biology. 63: 175004. Published Refereed?: Yes
- Dunning CAS\*, Bazalova-Carter M. (2018). Optimization of a table-top x-ray fluorescence computed tomography (XFCT) system. Physics in Medicine and Biology. 63: 235013.
   Published Refereed?: Yes
- 71. Dunning CAS\* and Bazalova-Carter M. (2018). Sheet beam x-ray fluorescence computed tomography (XFCT) imaging of gold nanoparticles. Medical Physics. 45: 2572-2582.
   Published Refereed?: Yes
- 72. Breitkreutz DY\*, Renaud MA, Seuntjens J, Weil MD, Zavgorodni S, Bazalova-Carter M. (2018). Inverse optimization of low-cost kilovoltage x-ray arc therapy plans.Medical Physics. 45: 5161-5171. Published Refereed?: Yes

- 73. Johnstone CD\*, Bazalova-Carter M. (2018). MicroCT imaging dose to mouse organs using a validated Monte Carlo model of the small animal radiation research platform (SARRP).Physics in Medicine and Biology. 63: 115012. Published Refereed?: Yes
- 74. Bazalova-Carter M, Weil MD, Breitkreutz D\*, Wilfley BP, and Graves E. (2017). Feasibility of external beam radiation therapy to deep-seated targets with kilovoltage x-rays. Medical Physics. 45: 597-607. Published Refereed?: Yes
- 75. Breitkreutz DY\*, Weil MD, Zavgorodni S, Bazalova-Carter M, (2017). Monte Carlo simulations of a kilovoltage external beam radiotherapy system on phantoms and breast patients. Medical Physics. 44: 6548-6559.
  Published Refereed?: Yes
- 76. Schueler E, Eriksson K, Hynning E, Hancock SL, Hiniker SM, Bazalova-Carter M, Wong TY, Le Q-T, Loo, Jr. BW, Maxim PG. (2017). Very high-energy electron (VHEE) beams in radiation therapy; Treatment plan comparison between VHEE, VMAT, and PPBS. Medical Physics. 44: 2544-2555. Published Refereed?: Yes
- 77. Giacometti V, Guatellia S, Bazalova-Carter M, Rosenfeld AB, and Schulte RW. (2017). Development of a high resolution voxelised head phantom for medical physics applications. Physica Medica. 33: 182-188. Published Refereed?: Yes
- 78. Johnstone CD\*, Lindsay P, Graves EE, Wong E, Perez JR, Poirier Y, Ben-Bouchta Y, Kanesalingam T, Chen H, Rubinstein AE, Sheng K, Bazalova-Carter M. (2017). Multi-Institutional MicroCT Image Comparison of Image-Guided Small Animal Irradiators. Physics in Medicine and Biology. 62: 5760-5776. Published Refereed?: Yes
- 79. Lee AS, Tang C, Hong WX, Park S, Bazalova-Carter M, Nelson G, Sanchez-Freire V, Bakerman I, Zhang W, Neofytou E, Connolly AJ, Chan CK, Graves EE, Weissman IL, Nguyen PK, and Wu JC. (2017). External Beam Radiation Therapy for the Treatment of Human Pluripotent Stem Cell-Derived Teratomas. Stem Cells. 35: 1994-2000. Published Refereed?: Yes

### **Book Chapters**

- Zalavari L, O'Connell J, Richtsmeier D, Nguyen J, K Iniewski, Bazalova-Carter. (2024). Machine Learning for Contaminant Detection in X-Ray Spectral Photon Counting. Kris Iniewski and Harish Gadey. Emerging Radiation Detection: Technology and Applications. Published, Springer, United States of America
- Rodesch PA, Richtsmeier D, Guliyev E, Iniewski K, Bazalova-Carter. (2024). CdZnTe-Based Photon-Counting Detector Modeling and Calibration for Nondestructive Testing (NDT). Kris Iniewski. CdTe and CdZnTe Materials: Material Properties and Applications. Published, Springer, United States of America
- Chelsea A. S. Dunning, Devon Richtsmeier, Pierre-Antoine Rodesch, Kris Iniewski & Magdalena Bazalova-Carter. (2023). K-Edge Imaging in Spectral Photon-Counting Computed Tomography: A Benchtop System Study. Kris Iniewski, Scott Hsieh. Photon Counting Computed Tomography. : 247-263. Published, Springer International Publishing, United States of America

#### **Conference Publications**

1. Esplen N\*, Egoriti L, Paley B, Planche T, Hoehr C, Gottberg A, Bazalova-Carter M. Design and Performance of the ARIEL X-Ray FLASH Irradiation Platform at TRIUMF. AAPM Annual Meeting, Columbus. United States of America Abstract

Refereed?: Yes, Invited?: No

2. Esplen N\*, Egoriti L, Paley B, Planche T, Hoehr C, Gottberg A, Bazalova-Carter M, Engineering design and performance verification of the 10 MV FLASH irradiation station at TRIUMF, FLASH Radiotherapy and Particle Therapy (FRPT). FLASH Radiotherapy and Particle Therapy (FRPT), Vienna, Austria Abstract

Refereed?: Yes, Invited?: No

Hart A\*, O'Briain T\*, Bazalova-Carter M, Beckham W, Rahmim A, Uribe C. Optimization of [18F]FDG 3. Injected Activity for a New GE Discovery MI PET/CT Scanner Using a NEMA Phantom. AAPM/COMP Annual Meeting (Virtual), Vancouver, BC, Canada Abstract

Refereed?: Yes, Invited?: No

Dunning CAS\* and Bazalova-Carter M. Design of a combined x-ray fluorescence computed tomography 4. (CT) and photon-counting CT table-top imaging system. Winter Institute of Medical Physics, Breckenridge, CO, United States of America Abstract

Refereed?: Yes, Invited?: No

5. Esplen N\*, Egoriti L, Gottberg A, and Bazalova-Carter M. Development of a Megavoltage Photon FLASH Radiotherapy Platform at TRIUMF. AAPM/COMP Annual Meeting (Virtual), Vancouver, BC, Canada Abstract

Refereed?: Yes, Invited?: No

- O'Briain, T.\*, Moo Yi, K., Bazalova-Carter, M.Synthesizing of Lung Tumors in Computed Tomography 6. Images. AAPM Annual Meeting (Virtual), Vancouver, BC, Canada Abstract Refereed?: Yes, Invited?: No
- Stalbaum T, Boyd D, Weil M, Chen H, Plies M, Song S, Ziskin V, Bazalova-Carter M, Boone J, Daly M, 7. Partain L. 200 kV x-ray source for radiotherapy and imaging: preliminary results and discussion. Medical Imaging 2020: Physics of Medical Imaging, Paper

Refereed?: No, Invited?: No

- 8. D Cecchi\*, F Therriault-Proulx, M Bazalova-Carter. Feasibility of Plastic Scintillator Dosimeters for FLASH Therapy. AAPM/COMP Annual Meeting (Virtual), Vancouver, BC, Canada Abstract Refereed?: Yes, Invited?: No
- 9. Richtsmeier, D.\*, Dunning, C.A.S.\*, Iniewski, K., Bazalova-Carter, M.Parameter optimization for multicontrast imaging using photon-counting CT. WesCan, Victoria, BC, Canada Abstract Refereed?: Yes, Invited?: No
- Byrne K, Alharbi M, O'Keeffe S, Kleefeld C, Bazalova-Carter M, Foley M. Novel inorganic scintillating 10. detectors and their applications in small animal irradiators: measurements and Monte Carlo simulations. Optical Sensing and Detection VI, Paper

Refereed?: No, Invited?: No

11. Dunning CAS\*, O'Connell J\*, Robinson SM\*, Murphy KJ\*, Frencken AL, van Veggel FCJM, Iniewski K, and Bazalova-Carter M. Photon-counting computed tomography of lanthanide contrast agents with a high-flux 330um cadmium zinc telluride (CZT) detector (Student Competition). WesCan, Victoria, BC, Canada Abstract

Refereed?: Yes, Invited?: No

- Dunning CAS\* and Bazalova-Carter M. Simultaneous X-ray Fluorescence Computed Tomography (XFCT) 12. and Photon-Counting CT (PCCT) Imaging of Phantoms and Mice on a Table-Top X-Ray System. AAPM/ COMP Annual Meeting (Virtual), Vancouver, BC, Canada Abstract Refereed?: Yes, Invited?: No
- 13. Esplen N\*, Egoriti L, Gottberg A, Bazalova-Carter M. Developing a spatially-fractionated FLASH-RT x-ray platform. Winter Institute of Medical Physics, Breckenridge, CO, United States of America Abstract Refereed?: Yes, Invited?: No
- Richtsmeier, D\*., Dunning, C.A.S.\*, Iniewski, K., Bazalova-Carter, M.Optimization of K-edge imaging of 14. multiple contrast agents using photon-counting computed tomography (PCCT). AAPM/COMP Annual Meeting (Virtual), Vancouver, BC, Canada Abstract Refereed?: Yes, Invited?: No
- Bazalova-Carter M and Esplen N\*. Conventional x-ray tubec are capable of ultrahigh dose-rate (FLASH) 15. delivery (Late Breaking Abstract). RRS Annual Meeting, San Diego, CA, United States of America Abstract

Refereed?: Yes, Invited?: No

- Richtsmeier, D.\*, Dunning, C.\*, Murphy, K.\*, Moffitt, M., Bazalova-Carter, M.Spectral computed tomography 16. imaging of gold contrast agent. PoND Research Days, Quebec City, QC, Canada Abstract Refereed?: No, Invited?: No
- Esplen N\*, Alyagoub E\*, and Bazalova-Carter M. Dosimetric verification for in-vivo radiobiology 17. experiments using a 3D-printed mouse. AAPM Annual Meeting, San Antonio, TX, United States of America Abstract Refereed?: Yes, Invited?: No
- 18. Esplen N\*, Egoriti L, and Bazalova-Carter M. Development of technologies for delivering microbeam radiotherapy on small-animal and FLASH-capable kilovoltage irradiation platforms (Honorable Mention). CSHR Research Forum, Winnipeg, MB, Canada Abstract Refereed?: Yes, Invited?: No
- Dunning CAS\*, O'Connell J\*, Robinson SM\*, Murphy KJ\*, Frencken AL, van Veggel FCJM, Iniewski K, and 19. Bazalova-Carter M. Multiplexed Spectral Computed Tomography (CT) Imaging of Three Contrast Agents. AAPM Annual Meeting, Nashville, TX, United States of America Abstract Refereed?: Yes, Invited?: No
- Dunning C\*, Murphy K\*, Robinson S\*, Hansson C, Ayukawa M, Iniewski K, and Bazalova-Carter M. 20. Spectral 3-D CT imaging using a 330-µm pitch high-flux CZT detector. The fifth workshop on Medical Applications of Spectroscopic X-ray Detectors, Geneva, Switzerland Abstract Refereed?: Yes, Invited?: No

Richtsmeier, D.\*, Murphy, K.\*, Iniewski, K., Bazalova-Carter, M.Signal linearity and resolvability of contrast 21. solutions in a mouse phantom using spectral CT. COMP Annual Scientific Meeting, Kelowna, BC, Canada Abstract

Refereed?: Yes, Invited?: No

Dunning CAS\*, Richtsmeier D\*, and Bazalova-Carter M. Combined x-ray fluorescence and spectral 22. computed tomography of multiple contrast agents (Young Investigator Symposium Finalist). COMP Annual Scientific Meeting, Kelowna, BC, Canada Abstract

Refereed?: Yes, Invited?: No

Esplen N\*, Egoriti L, Gottberg A, and Bazalova-Carter M. Strategies for the delivery of spatially fractionated 23. radiotherapy using conventional and FLASH-capable sources (Young Investigator Symposium - 2nd place). COMP Annual Scientific Meeting, Kelowna, BC, Canada Abstract Refereed?: Yes, Invited?: No

Esplen N\*, Chergui L\*, Johnstone C\*, and Bazalova-Carter M. Optimization of a microbeam collimator 24. design for use with image-guided small animal irradiators. NCI/RSS workshop on understanding high-dose, ultra-dose-rate and spatially fractionated radiotherapy, Washington, DC, United States of America Abstract

Refereed?: Yes, Invited?: No

- Johnstone CD\* and Bazalova-Carter M. MicroCT Imaging Dose for a Commercial Image-Guided Small 25. Animal Irradiator. COMP Annual Scientific Meeting, Montreal, QC, Canada Abstract Refereed?: Yes, Invited?: No
- Dunning CAS\* and Bazalova-Carter M. Optimization of a Table-Top X-Ray Fluorescence Computed 26. Tomography (XFCT) System (Best in Physics - Imaging). AAPM Annual Meeting, Nashville, TX, United States of America Abstract Refereed?: Yes, Invited?: No
- Esplen N\*, Chergui L\*, Johnstone C\*, and Bazalova-Carter M. Optimization of a microbeam collimator for 27. use on the Small Animal Radiation Research Platform. AAPM Annual Meeting, Nashville, TX, United States of America Abstract

Refereed?: Yes, Invited?: No

- 28. Dunning CAS\* and Bazalova-Carter M. Optimization of a Table-Top X-Ray Fluorescence Computed Tomography (XFCT) System. CSHR Research Forum, Winnipeg, MB, Canada Abstract Refereed?: Yes, Invited?: No
- 29. Breitkreutz, DY.\*, Renaud, MA., Weil MD., Seuntjeuns, J., Zavgorodni, S., Bazalova-Carter, M.Inverse Optimization of Low-Cost Kilovoltage Arc Therapy Plans. World Congress on Medical Physics and Biomedical Engineering, Prague, Czechia Abstract Refereed?: Yes, Invited?: No
- Breitkreutz, DY.\*, Johnstone, C.\*, Bazalova-Carter, M.MC Simulations of MicroCT Imaging on the Small 30. Animal Radiation Research Platform (SARRP). COMP Annual Scientific Meeting, Montreal, QC, Canada Abstract

Refereed?: Yes, Invited?: No

- 31. Lindsay, C.\*, Ansbacher, W., Gange, I., Star-lack, J., Bazalova-Carter, M.Position Reconstruction using a High-Efficiency Cadmium Tungstate Portal Imager and Convolutional Neural Network Fiducial Marker Detection. AAPM Annual Meeting, Nashville, TX, United States of America Abstract Refereed?: Yes, Invited?: No
- 32. Breitkreutz, DY.\*, Renaud, MA., Weil MD., Seuntjeuns, J., Zavgorodni, S., Bazalova-Carter, M.Inverse Optimization of Low-Cost Kilovoltage Arc Therapy Plans for Breast and Lung Patients. COMP Annual Scientific Meeting, Ottawa, ON, Canada Abstract Refereed?: Yes, Invited?: No
- Dunning CAS\* and Bazalova-Carter M. Alternative geometries for x-ray fluorescence CT (XFCT) imaging of gold nanoparticles. AAPM Annual Meeting, Denver, CO, United States of America Abstract Refereed?: Yes, Invited?: No
- Breitkreutz, DY.\*, Renaud, MA., Weil MD., Seuntjeuns, J., Zavgorodni, S., Bazalova-Carter, M.Inverse Optimization of Low-Cost Kilovoltage Arc Therapy Plans for Breast and Lung Patients. CSHR Research Forum, Winnipeg, MB, Canada Abstract Refereed?: Yes, Invited?: No
- 35. Johnstone CD\*, Beaulieu L, Therriault-Proulx F, and Bazalova-Carter M. Development and Characterization of a Plastic Scintillating Detector for Small Animal Irradiators (Young Investigator Competition 3rd Place). COMP Annual Scientific Meeting, Ottawa, ON, Canada Abstract Refereed?: Yes, Invited?: No
- 36. Johnstone CD\* and Bazalova-Carter M. Establishing MicroCT Imaging Dose to Mouse Organs using a Validated Monte Carlo Model of the Small Animal Radiation Research Platform. AAPM Annual Meeting, Denver, CO, United States of America Abstract Refereed?: Yes, Invited?: No
- 37. Lindsay, CD.\*, Bazalova-Carter, M., Ansbacher, W.MV CBCT Reconstruction using a high-DQE Focused Cadmium Tungstate Detector. COMP Annual Scientific Meeting, Ottawa, ON, Canada Abstract Refereed?: Yes, Invited?: No
- Baxter H\*, Sawkey D, Fahimian B, Chin E, Ansbacher W,Bazalova-Carter M. VirtuaLinac Monte Carlo dose calculations of unconventional radiotherapy techniques. Varian Research Meeting, Chicago, IL, United States of America Abstract Refereed?: Yes, Invited?: No
- Dunning CAS\* and Bazalova-Carter M. Alternative geometries for x-ray fluorescence CT (XFCT) imaging of gold nanoparticles (Young Investigator Symposium Finalist). COMP Annual Scientific Meeting, St. John's, NL, Canada Abstract Refereed?: Yes, Invited?: No
- Lindsay, CD.\*, Bazalova-Carter, M., Ansbacher, W.MV CBCT Reconstruction using an experimental focused cadmium tungstate detector. Varian Research Meeting, Chicago, IL, United States of America Abstract Refereed?: Yes, Invited?: No

ereed?: Yes, Invited?: No

 Johnstone C\* and Bazalova-Carter M. Automated Imaging Quality Assurance for Image-Guided Small Animal Irradiators (Young Investigator Symposium Finalist). COMP Annual Scientific Meeting, St. John's, NL, Canada Abstract

Refereed?: Yes, Invited?: No

 Bazalova-Carter M, Ahmad M, Matsuura M, Takao S, Matsuo Y, Fahrig R, Shirato H, Umegaki K, Xing L. Molecular imaging of gold with 220 MeV protons: a feasibility study. PTCOG Meeting, Prague, Czechia Abstract
 Referend2: Xec. Invited2: No.

Refereed?: Yes, Invited?: No

- 43. Bazalova-Carter M, Ahmad M, Matsuura M, Takao S, Matsuo Y, Fahrig R, Shirato H, Umegaki K, Xing L. X-ray fluorescence CT induced by proton beam: experiments and simulations. AAPM Annual Meeting, Anaheim, CA, United States of America Abstract Refereed?: Yes, Invited?: No
- 44. Bazalova-Carter M, Ahmad M, Fahrig R, and Xing L. High-sensitivity L-shell x-ray fluorescence CT imaging of gold. AAPM Annual Meeting, Anaheim, CA, United States of America Abstract Refereed?: Yes, Invited?: No
- 45. Bazalova-Carter M, Ahmad M, Matsuura M, Takao S, Matsuo Y, Fahrig R, Shirato H, Umegaki K, Xing L. Proton induced x-ray fluorescence CT (pXFCT) imaging. ESTRO Congress, Barcelona, Spain Abstract Refereed?: Yes, Invited?: No
- 46. Bazalova-Carter M, Ahmad M, Matsuura M, Takao S, Matsuo Y, Fahrig R, Shirato H, Umegaki K, Xing L. Experimental validation of proton-induced x-ray fluorescence imaging for visualization of gold nanoparticles. WMIC Annual Meeting, Honolulu, HI, United States of America Abstract Refereed?: Yes, Invited?: No
- 47. Ahmad M, Bazalova-Carter M, Fahrig R, and Xing L. X-ray fluorescence imaging of superficial malignancies using gold nanoparticles. ASTRO Annual Meeting, San Diego, CA, United States of America Abstract Refereed?: Yes, Invited?: No
- 48. Bazalova M, Qu B, Palma B, Hardemark B, Hynning E, Maxim P, and Loo B. Treatment planning tool for radiotherapy with very-high energy electron beams (Featured Presentation). AAPM Annual Meeting, Austin, TX, United States of America Abstract Refereed?: Yes, Invited?: No
- 49. Bazalova M, Ahmad M, Fahrig R, and Xing L. Proton beam x-ray fluorescence CT. AAPM Annual Meeting, Austin, TX, United States of America Abstract Refereed?: Yes, Invited?: No
- 50. Bazalova M, Qu B, Palma B, Hardemark B, Hynning E, Maxim P, and Loo B. Treatment planning workflow for very high-energy electron beam radiotherapy. COMP Annual Scientific Meeting, Banff, AB, Canada Abstract Refereed?: Yes, Invited?: No
- 51. Bazalova M, Ahmad M, Fahrig R, and Xing L. X-Ray Fluorescence Computed Tomography Induced By Photon, Electron, And Proton Beams (Highligted by medicalphyicssweb.org). RSNA Annual Meeting, Chicago, IL, United States of America Abstract Refereed?: Yes. Invited?: No

- 52. Shuhendler AJ, Ye D, Brewer KD, Bazalova M, Graves EE, Rutt E, and Rao J. Cancer Therapy Response Monitoring Using A Novel MRI Contrast Agent That Self-Assembles In Dying Tissue. WIMC Annual Meeting, Seoul, Korea, South Abstract Refereed?: Yes, Invited?: No
- Hristov D, Schlosser J, Bazalova M, and Chen J. Monte Carlo modeling of ultrasound probes for real-time 53. ultrasound image-guided radiotherapy. AAPM Annual Meeting, Austin, TX, United States of America Abstract

Refereed?: Yes, Invited?: No

- Bazalova M, Qu B, Palma B, Hardemark B, Hynning E, Maxim P, and Loo B. Treatment-Planning Study For 54. Very High-Energy Electron Beam Radiotherapy: Integral Dose Reduction For Pediatric Patients (Walk with the Professor). ASTRO Annual Meeting, San Francisco, United States of America Abstract Refereed?: Yes, Invited?: No
- Alexander Hart, Nolan Esplen, Jan Dudzic, Steve Perlman, Magdalena Bazalova-Carter, X-rayFLASH 55. Irradiation of Drosophila melanogaster. Flash Radiotherapy and Particle Therapy (FRPT), Barcelone, Spain Conference Date: 2022/11 Abstract Refereed?: Yes, Invited?: No
- D Richtsmeier, J O'Connell, P Rodesch, K Iniewski, M Bazalova-Carter. Metal Artifact Correction Using 56. High-Energy Data in Photon-Counting CT. AAPM Annual Meeting, Washington, DC, United States of America Conference Date: 2022/7 Abstract Refereed?: Yes, Invited?: No
- 57. A Hart, J Dudzic, J Eby, S Perlman, M Bazalova-Carter. FLASH Irradiation of Drosophila Melanogaster Using Low Energy X-Rays, AAPM Annual Meeting, Washington, DC, United States of America Conference Date: 2022/7 Abstract Refereed?: Yes, Invited?: No
- N Esplen, L Egoriti, T Planche, A Hart, B Paley, C Hoehr, A Gottberg, M Bazalova-Carter. Dosimetric 58. Characterization of the ARIEL 10 MV X-Ray Ultrahigh Dose-Rate (FLASH) Irradiation Platform at TRIUMF. AAPM Annual Meeting, Washington, DC, United States of America Conference Date: 2022/7 Abstract Refereed?: Yes, Invited?: No
- Jericho O'Connell, Michael Weil, Magdalena Bazalova-Carter. Low-cost, kilovoltage, isocentric 59. radiotherapy (kVIRT) machine design optimisation and treatment characterisation (Young Investigator Symposium finalist). COMP Annual Scientific Meeting, Quebec City, Canada Conference Date: 2022/6 Abstract Refereed?: Yes, Invited?: No
- 60. O'Connell J, Bazalova-Carter M. Fastcat: Rapid Hybrid Monte Carlo Simulation of Cone Beam CT (CBCT). Monte Carlo Techniques for Medical Applications (MCMA), Antwerp, Belgium Conference Date: 2022/4 Abstract Refereed?: Yes, Invited?: No

- 61. Nolan Esplen, Luca Egoriti, Thomas Planche, Bill Paley, Conny Hoehr, Alex Gottberg, Magdalena Bazalova-Carter. Engineering design and performance verification of the 10 MV FLASH irradiation station at TRIUMF (Best abstract award). Flash Radiotherapy and Particle Therapy (virtual), Conference Date: 2021/12 Abstract Refereed?: Yes, Invited?: No
- Hart A, Cecchi D, Giguere C, Larose F, Therriault-Proulx F, Beaulieu L, Bazalova-Carter M. Feasibility of Ultrahigh and Conventional Dose Rate in vitro Studies on a Benchtop X-ray System. Flash Radiotherapy and Particle Therapy, Conference Date: 2021/12 Abstract Refereed?: Yes, Invited?: No
- Shahirah Shaharuddin, Alexander Hart, Daniel D. Cecchi, Magdalena Bazalova-Carter, Mark Foley. Real-Time Dosimetry of Ultrahigh Dose-Rate X-Ray Beams Using Scintillation Detectors (Best student presentation). IEEE Sensors (virtual), Conference Date: 2021/10 Paper Refereed?: Yes, Invited?: No
- Cecchi D, Gigeure C, Larose F, Therriault-Proulx F, Beaulieu L, Bazalova-Carter M. Plastic and Lead-Doped Scintillators for Ultrahigh Dose-Rate Irradiations Delivered with An X-Ray Tube. AAPM Annual Meeting (virtual), Conference Date: 2021/7 Abstract Refereed?: Yes, Invited?: No
- Richtsmeier D, O'Connell J, Hart A, Rodesch PA, Calheiros TF, Frencken AL, Iniewski K, Bazalova-Carter M. Characterization of a bench-top photon-counting CT system. AAPM Annual Meeting (virtual), Conference Date: 2021/7 Abstract Refereed?: Yes, Invited?: No
- 66. Nolan Esplen, Luca Egoriti, Bill Paley, Thomas Planche, Conny Hoehr, Alex Gottberg, Magdalena Bazalova-Carter. Design and performance of the ARIEL x-ray FLASH irradiation platform at TRIUMF (Young Investigator Symposium winner -2nd place). AAPM Annual Meeting (virtual), Conference Date: 2021/7 Abstract Refereed?: Yes, Invited?: No

## **Presentations**

- (2022). FLASH: High Therapeutic Potential While Sparing Normal Tissue Complications at Ultra-High Dose Rates: Dosimetry Aspects. NCRP Annual Meeting, United States of America Main Audience: Decision Maker Invited?: Yes, Keynote?: No
- (2022). FLASH Radiotherapy Physics. International Conference on Radiation Medicine, Saudi Arabia Main Audience: Researcher Invited?: Yes, Keynote?: No
- (2022). High-energy electron therapy. BIR Annual Radiotherapy and Oncology Meeting, United Kingdom Main Audience: Researcher Invited?: Yes, Keynote?: No

- (2021). Physics and biology of FLASH radiotherapy. New Zealand Physics & Engineering in Medicine Conference, New Zealand Main Audience: Researcher Invited?: Yes, Keynote?: Yes
- (2021). Transforming radiotherapy with ultrahigh dose rates (FLASH). ASTRO Annual Meeting, United States of America Main Audience: Researcher Invited?: Yes, Keynote?: Yes

## **Student/Postdoctoral Supervision**

#### Master's Thesis [n=2]

2024/9 - 2026/8 Principal Supervisor	Olivia Moluchi, University of Victoria Thesis/Project Title: Undecided Present Position: MSc student
2024/1 - 2025/8 Principal Supervisor	Nathan Clements, University of Victoria Thesis/Project Title: The use of laser wake field accelerators for radiotherapy Present Position: MSc student
Doctorate [n=6]	
2023/9 - 2027/8 Principal Supervisor	Jade Fischer, University of Victoria Thesis/Project Title: Spatially-fractionated radiotherapy with very high-energy electrons Present Position: PhD student
2023/9 - 2027/8 Principal Supervisor	Olivia Masella, University of Victoria Thesis/Project Title: KOALA - affordable radiotherapy system Present Position: PhD student
2021/3 - 2024/7 Principal Supervisor	Alexander Hart, University of Victoria Thesis/Project Title: FLASH radiotherapy with x-rays Present Position: Postdoctoral fellow at BC Cancer
2021/1 - 2023/8 Principal Supervisor	Jericho O'Connell, University of Victoria Thesis/Project Title: Megavoltage x-ray CT imaging Present Position: Postdoctoral fellow at Harvard
2020/1 - 2024/4 Principal Supervisor	Devon Richtsmeier, University of Victoria Thesis/Project Title: Gold nanoparticle imaging and drug delivery Present Position: Medical Physics resident at BC Cancer
2019/1 - 2023/4 Principal Supervisor	Nolan Esplen, University of Victoria Thesis/Project Title: Microbeam and FLASH therapy Present Position: Postdoctoral fellow at MD Anderson

#### Post-doctorate [n=2]

2024/4 - 2026/3 Principal Supervisor	James Day, University of Victoria Thesis/Project Title: PCD-CT image quality Present Position: Postdoctoral fellow
2023/11 - 2025/10 Principal Supervisor	Alison Deng, University of Victoria Thesis/Project Title: ML for PCD-CT Present Position: Postdoctoral fellow





Date Submitted: 2024-09-27 15:07:26 Confirmation Number: 1833325 Template: CIHR Biosketch

## Dr. James Alvin Day

Correspondence language: English Sex: Male Date of Birth: 3/21 Canadian Residency Status: Canadian Citizen Country of Citizenship: Canada

## **Contact Information**

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# Dr. James <u>Day</u>

# Degrees

2019/9 - 2024/4	Doctorate, PhD Biomedical Physics CAMPEP, Toronto Metropolitan University Degree Status: Completed
2017/9 - 2019/9	Master's Thesis, MSc Biomedical Physics, Toronto Metropolitan University Degree Status: Completed

2011/9 - 2016/4 Bachelor's Honours, BSc Physics, The University of Regina Degree Status: Completed

# Recognitions

2022/9 - 2023/8	Ryerson Graduate Fellowship Toronto Metropolitan University
2021/9 - 2022/8	Ryerson Graduate Fellowship Toronto Metropolitan University
2020/9 - 2021/8	Ryerson Graduate Fellowship Toronto Metropolitan University
2019/9 - 2020/8	Ryerson Graduate Fellowship Toronto Metropolitan University
2018/9 - 2019/8	Ryerson Graduate Fellowship Toronto Metropolitan University

# Employment

2024/4	Post-Doctoral Fellow University of Victoria
2019/9 - 2024/4	Supervisory Teaching Assistant Toronto Metropolitan University
2017/9 - 2019/8	Teaching assistant Toronto Metropolitan University
2016/5 - 2017/8	Research assistant The University of Regina
2016/9 - 2016/12	Intern Environmental Instruments Canada
2010/1 - 2016/4	Bakery Sales Clerk Safeway

2007/6 - 2010/1 Courtesy Clerk Safeway

## Affiliations

The primary affiliation is denoted by (\*) (\*) 2024/4 Post-doctoral Fellow, University of Victoria

# **Publications**

### **Journal Articles**

- James Day Jesse Tanguay. (2024). Monte-Carlo study of contrast-enhanced spectral mammography with 1. cadmium telluride photon-counting x-ray detectors. Medical Physics. 51(4): 2479 to 2498. Published Refereed?: Yes, Open Access?: No
- James Day Jesse Tanguay. (2022). The detective quantum efficiency of cadmium telluride photon-counting 2. x-ray detectors in breast imaging applications. Medical Physics. 49(3): 1481 to 1494. Refereed?: Yes, Open Access?: No
- 3. Jesse Tanguay Devon Richtsmeier Chris Dydula James Day Kris Iniewski Magdalena Bazalova-Carter. (2021). A detective quantum efficiency for spectroscopic X-ray imaging detectors. Medical Physics. 48(11): 6781 to 6799. Published Refereed?: Yes, Open Access?: No

### **Book Chapters**

- 1. Alison Deng James Day Elmaddin Guliyev Kris Iniewski Magdalena Bazalova-Carter. (2024). Artificial Intelligence for X-ray Photon Counting Technology: Current Status and Future Perspectives. Kris Iniewski, Redlen Technologies, Canada Liang (Kevin) Cai, Canon Medical Research USA. Deep Learning for Advanced X-ray Detection and Imaging Applications. Accepted, Springer, Canada
- 2. Devon Richtsmeier Xinchen Deng Pierre-Antoine Rodesch Joanna Nguyen James Day Kris Iniewski William Siu Magdelana Bazalova-Carter. (2024). Photon Counting Computed Tomography: Clinical Applications, Detector Technology and Artificial Intelligence. Salim Si-Mohamed, University of Lyon, France Kris Iniewski, Redlen Technologies, Canada. Clinical Application of Spectral Photon Counting Computed Tomography.

Accepted, Springer, Canada

### **Conference Publications**

James Day Jesse Tanguay. An experimentally validated simulation model of a two-bin flat-panel cadmium 1. telluride photon-counting detector for spectroscopic breast imaging applications. Toronto Metropolitan University Grad Showcase, Toronto, Canada Conference Date: 2024/1 Poster Refereed?: No, Invited?: Yes

- James Day Jesse Tanguay. An experimentally validated simulation model of a two-bin flat-panel cadmium telluride photon-counting detector for spectroscopic breast imaging applications. SPIE Medical Imaging, San Diego, United States of America Conference Date: 2023/2 Paper Refereed?: Yes, Invited?: Yes
- James Day Jesse Tanguay. An Experimentally Validated Simulation Model of a Two-Bin Flat-Panel Cadmium Telluride Photon-Counting Detector for Spectroscopic Breast Imaging Applications.SPIE Medical Imaging, San Diego, Canada Conference Date: 2023/2 Poster Refereed?: No, Invited?: Yes
- James Day Jesse Tanguay. An Experimentally Validated Simulation Model of a Two-Bin Flat-Panel Cadmium Telluride Photon-Counting Detector for Spectroscopic Breast Imaging Applications.SPIE Medical Imaging, San Diego, United States of America Conference Date: 2023/2 Abstract Refereed?: Yes, Invited?: Yes
- James Day Jesse Tanguay. Monte-Carlo Simulation of the Detective Quantum Efficiency of Cadmium Telluride X-ray detectors for Photon-Counting Mammography. American Associations of Physics in Medicine, Conference Date: 2022/7 Poster Refereed?: No, Invited?: Yes
- James Day Jesse Tanguay. Monte-Carlo Simulation of the Detective Quantum Efficiency of Cadmium Telluride X-ray detectors for Photon-Counting Mammography. American Association of Physics in Medicine, Conference Date: 2022/7 Abstract Refereed?: Yes, Invited?: Yes
- James Day Jesse Tanguay. A Monte Carlo Approach to Photon Counting Flat Field Digital Mammography using Cadmium Telluride Detectors. Imaging network meeting ontario (IMNO), Toronto, Canada Conference Date: 2021/10 Abstract Refereed?: Yes, Invited?: Yes

# **Presentations**

 (2021). A Monte Carlo Approach to Photon Counting Flat Field Digital Mammography using Cadmium Telluride Detectors. Imaging Network Meeting Ontario, Canada Main Audience: Researcher Invited?: Yes, Keynote?: No

# **Student/Postdoctoral Supervision**

#### Bachelor's [n=1]

2024/6 Maia Pysklywec, University of Victoria Principal Supervisor Thesis/Project Title: The Development of Bone Density Calibration Phantoms using Chalk for Quantitative Computed Tomography Present Position: Research Assistant Co-op Student





Date Submitted: 2024-09-27 15:34:31 Confirmation Number: 1833367 Template: CIHR Biosketch

## Dr. Xinchen Deng

Correspondence language: English Sex: Female Date of Birth: 2/08 Canadian Residency Status: Permanent Resident Country of Citizenship: China

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# Dr. Xinchen Deng

## Degrees

2017/9 - 2022/12	Doctorate, Doctor of Philosophy, University of British Columbia Degree Status: Completed
2015/8 - 2017/5	Master's Thesis, Master of Science, Duke University Degree Status: Completed
2010/8 - 2014/12	Bachelor's, Bachelor of Science, Beloit College Degree Status: Completed

# Recognitions

2022/1	Graduate Dean's Thesis Fellowship University of British Columbia
2019/9 - 2022/12	University Graduate Fellowship University of British Columbia
2017/9 - 2018/8	Graduate Dean's Entrance Scholarship University of British Columbia

# Employment

2023/11	Postdoctoral Fellow Department of Physics & Astronomy, Faculty of Science, University of Victoria
2017/9 - 2022/12	Research Assistant Department of Computer Science, Mathematics, Physics, Statistics, Irving K. Barber Faculty of Science, University of British Columbia
2017/9 - 2021/12	Teaching Assistant Department of Computer Science, Mathematics, Physics, Statistics, Irving K. Barber Faculty of Science, University of British Columbia
2017/12 - 2018/12	Medical Physics Intern BC Cancer Agency
2016/5 - 2017/5	Research Assistant Department of Radiation Oncology, School of Medicine, Duke University Medical Center

# Affiliations

The primary affiliation is denoted by (\*)(\*) 2023/11Postdoctoral fellow, University of Victoria

## Leaves of Absence and Impact on Research

2023/1 - 2023/10Other Circumstances, University of British Columbia

After finishing my PhD, I took some time off to spend with my family. Because of COVID, I have not been able to see them over the past few years. This time away was invaluable for reconnecting with my loved ones and recharging after the intense demands of my research. It allowed me to reflect on my work and return with a clearer perspective and renewed energy for the next steps in my career as a postdoctoral fellow in November 2023.

# **Publications**

#### **Journal Articles**

- Deng, Xinchen and Richtsmeier, Devon and Rodesch, Pierre-Antoine and Iniewski, Kris and Bazalova-Carter, Magdalena. (2024). Simultaneous iodine and barium imaging with photon-counting CT. Physics in Medicine and Biology. 69: 19. Refereed?: No
- Shreeves, Phillip and Andrews, Jeffrey L and Deng, Xinchen and Ali-Adeeb, Ramie and Jirasek, Andrew. (2023). Nonnegative matrix factorization with group and basis restrictions. Statistics in Biosciences. 15(3): 608--632.

Refereed?: Yes

- Deng, Xinchen and Milligan, Kirsty and Brolo, Alexandre and Lum, Julian J and Andrews, Jeffrey L and Jirasek, Andrew. (2022). Radiation treatment response and hypoxia biomarkers revealed by machine learning assisted Raman spectroscopy in tumour cells and xenograft tissues. Analyst. 147(22): 5091--5104. Refereed?: Yes
- 4. Milligan, Kirsty and Van Nest, Samantha J and Deng, Xinchen and Ali-Adeeb, Ramie and Shreeves, Phillip and Punch, Samantha and Costie, Nathalie and Pavey, Nils and Crook, Juanita M and Berman, David M and others. (2022). Raman spectroscopy and supervised learning as a potential tool to identify high-dose-rate-brachytherapy induced biochemical profiles of prostate cancer. Journal of Biophotonics. 15(11): e202200121. Refereed?: Yes
- Ali-Adeeb, Ramie N and Shreeves, Phil and Deng, Xinchen and Milligan, Kirsty and Brolo, Alex G and Lum, Jullian J and Haston, Christina and Andrews, Jeffrey L and Jirasek, Andrew. (2022). Raman microspectroscopy and machine learning for use in identifying radiation-induced lung toxicity. Plos one. 17(12): e0279739. Refereed?: Yes
- 6. Deng, Xinchen and Milligan, Kirsty and Ali-Adeeb, Ramie and Shreeves, Phillip and Brolo, Alexandre and Lum, Julian J and Andrews, Jeffrey L and Jirasek, Andrew. (2022). Group and basis restricted non-negative matrix factorization and random forest for molecular histotype classification and Raman biomarker monitoring in breast cancer. Applied spectroscopy. 76(4): 462--474. Refereed?: Yes
- 7. Milligan, Kirsty and Deng, Xinchen and Ali-Adeeb, Ramie and Shreeves, Phillip and Punch, Samantha and Costie, Nathalie and Crook, Juanita M and Brolo, Alexandre G and Lum, Julian J and Andrews, Jeffrey L and others. (2022). Prediction of disease progression indicators in prostate cancer patients receiving HDR-brachytherapy using Raman spectroscopy and semi-supervised learning: a pilot study. Scientific Reports. 12(1): 15104. Refereed?: Yes

- 8. Milligan, Kirsty and Deng, Xinchen and Shreeves, Phillip and Ali-Adeeb, Ramie and Matthews, Quinn and Brolo, Alexandre and Lum, Julian J and Andrews, Jeffrey L and Jirasek, Andrew. (2021). Raman spectroscopy and group and basis-restricted non negative matrix factorisation identifies radiation induced metabolic changes in human cancer cells. Scientific reports. 11(1): 3853.
- Deng, Xinchen and Ali-Adeeb, Ramie and Andrews, Jeffrey L and Shreeves, Phillip and Lum, Julian J and Brolo, Alexandre and Jirasek, Andrew. (2020). Monitor ionizing radiation-induced cellular responses with Raman spectroscopy, non-negative matrix factorization, and non-negative least squares. Applied spectroscopy. 74(6): 701--711. Refereed?: Yes
- Zhang, Yawei and Deng, Xinchen and Yin, Fang-Fang and Ren, Lei. (2018). Image acquisition optimization of a limited-angle intrafraction verification (LIVE) system for lung radiotherapy. Medical physics. 45(1): 340--351.
   Refereed?: Yes

### **Book Chapters**

- Alison(Xinchen) Deng James Day Elmaddin Guliyev Kris Iniewski Magdalena Bazalova-Carter. (2024). Artificial Intelligence for X-ray Photon Counting Technology: Current Status and Future Perspectives. Kris Iniewski, Redlen Technologies, Canada Liang (Kevin) Cai, Canon Medical Research US. Deep Learning for Advanced X-ray Detection and Imaging Applications. Accepted, Springer, Canada
- Devon Richtsmeier Xinchen Deng Pierre-Antoine Rodesch Jonna Nguyen James Day Kris Iniewski William Siu Magdelana Bazalova-Carter. (2024). Photon Counting Computed Tomography: Clinical Applications, Detector Technology and Artificial Intelligence. Salim Si-Mohamed, University of Lyon, France Kris Iniewski, Redlen Technolgies, Canada. Clinical Application of Spectral Photon Counting Computed Tomography. Accepted, Springer, Canada

#### **Conference Publications**

- 1. Deng, X and Milligan, K and Ali-Adeeb, R and Shreeves, P and Van Nest, S and Andrews, J and Brolo, A and Lum, J and Jirasek, A. Using Raman Spectroscopy and Machine Learning to Predict and Monitor Cellular Radiation Responses. Canadian Organization of Medical Physicists Annual Scientific Meeting, Poster, Invited?: No
- Deng, Xinchen and Ali-Adeeb, Ramie and Shreeves, Phil and Brolo, Alex and Andrews, Jeff and Lum, Julian and Jirasek, Andrew. Using Raman spectra and non-negative matrix factorization to monitor ionizing radiation induced cellular responses. Canadian Organization of Medical Physicists Annual Scientific Meeting, Poster, Invited?: No

## **Presentations**

 (2024). Multi-Contrast Imaging with Photon-Counting CT to Distinguish and Quantify Barium and Iodine. American Association of Physicists in Medicine Annual Scientific Meeting, United States of America Main Audience: Researcher Invited?: No, Keynote?: No

# **Student/Postdoctoral Supervision**

#### Bachelor's [n=1]

2024/9 Kiana Gallagher, University of Victoria Principal Supervisor Thesis/Project Title: Applying Deep learning Techniques to Improve Photon-couting CT Image Quality Present Position: University of Victoria