# *Curriculum vitae* of Magdalena Bazalova-Carter

## PERSONAL INFORMATION


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| Name | Magdalena Bazalova-Carter, PhD, DABR |
| Position | Assistant Professor |
| | Canada Research Chair in Medical Physics (Tier 2) |
| Address | Department of Physics and Astronomy<br>University of Victoria<br>PO Box 1700 STN CSC<br>Victoria BC V8W 2Y2 Canada |
| Telephone | +1-250-721-7704 |
| Email | bazalova@uvic.ca |
| Nationality | Czech Republic |


## WORK EXPERIENCE

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| Dates | July 2015 – present |
| Name and address of employer | University of Victoria, Department of Physics and Astronomy, PO Box 1700 STN CSC, Victoria, BC V8W 2Y2, Canada, http://www.uvic.ca. X-ray Cancer Imaging and Therapy Experimental Lab. |
| Position held | Assistant Professor and Canada Research Chair in Medical Physics (Tier 2) |
| Dates | January 2012 – June 2015 |
| Name and address of employer | Department of Radiation Oncology, Stanford School of Medicine, 875 Blake Wilbur, Stanford, CA 94305-5847, http://www.stanford.edu. |
| Position held | Instructor |
| Dates | November 2004 – December 2004 |
| Name and address of employer | Centre de Physique des Particules de Marseille, 163 avenue de Luminy, Case 902, 13288 Marseille cedex 09, http://marwww.in2p3.fr. |
| Position held | Programmer |
| Dates | March 2001 – December 2004 |
| Name and address of employer | Institute of Physics, Academy of Sciences of the Czech Republic, Na Slovance 2, 182 21 Prague 8, http://www.fzu.cz. |
| Position held | Researcher |

## EDUCATION AND TRAINING

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| Dates | January 2009 – December 2011 |
| Name and type of organisation providing education and training | Stanford School of Medicine, Department of Radiation Oncology, Stanford, CA 94305-5847, http://www.stanford.edu |
| Title of qualification awarded | Postdoctoral fellow |
| Dates | October 2008 – December 2008 |
| Name and type of organisation providing education and training | McGill University Health Center, Medical Physics Unit, Montreal, QC, Canada, http://www.mcgill.ca. |
| Title of qualification awarded | Postdoctoral fellow |

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| Dates | January 2005 – September 2008 |
| Name and type of organisation providing education and training | McGill University, Department of Physics, Montréal, QC, Canada, H3A 2T8, http://www.mcgill.ca. |
| Title of qualification awarded | PhD |
| Dates | June 2003 – December 2004 |
| Name and type of organisation providing education and training | Czech Technical University, Faculty of Nuclear Sciences and Physical Engineering, Department of Dosimetry and Application of Ionizing Radiation, Prague, Czech Republic. http://www.fjfi.cvut.cz. |
| Title of qualification awarded | PhD., study interrupted |
| Dates | September 1998 – June 2003 |
| Name and type of organisation providing education and training | Czech Technical University, Faculty of Nuclear Sciences and Physical Engineering, Department of Dosimetry and Application of Ionizing Radiation, Prague, Czech Republic. http://www.fjfi.cvut.cz. |
| Title of qualification awarded | Ing., equivalent of Master of Science |
| Dates | September 2002 – January 2003 |
| Name and type of organisation providing education and training | Universidad Politecnica de Valencia, Department of Chemistry and Nuclear Engineering, Valencia, Spain. http://www.upv.es. |
| Title of qualification awarded | none |

## CLINICAL EXPERIENCE

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| Linear accelerator QA | Monthly and annual, March 2009-March 2017 |
| Patient-specific QA | For IMRT and VMAT, May 2014-May 2015 |
| Kilovoltage photon beam dosimetry | Dosimetry on a microCT scanner and stand-alone small animal x-ray irradiators, March 2011-May 2015. |

## SCHOLARSHIPS

- 2002 Czech Technical University Merit Scholarship
- 2001 Czech Technical University Merit Scholarship

## AWARDS

- 2018 AAPM John S. Laughlin Young Scientist Award (2018, American Association of Physicists in Medicine Annual Meeting, Nashville, TN).
- 2015 Best publication in Medical Physics Award by Czech Association of Medical Physicists $500 (2015, Prague, Czech Republic).
- 2015 Department of Radiation Oncology Staff Recognition Award (2015, Stanford University, Stanford, CA).
- 2013 AAPM Jack Fowler Junior Investigator Award $1,000 (2013, American Association of Physicist in Medicine Annual Meeting, Indianapolis, IN).
- 2012 AAPM Research Seed Funding Grant $25,000 (2012, American Association of Physicist in Medicine Annual Meeting, Charlotte, NC).
- 2008 Best publication in Medical Physics Award by Czech Association of Medical Physicists $500 (2009, Prague, Czech Republic).
- 2008 Siemens Excellence Award – best PhD thesis $1,000 (2008, Prague, Czech Republic).
- 2007 Sylvia Fedoruk Award – best Canadian paper in Medical Physics $500 (2008, Quebec City, Canada).
- The Young Investigator's Award at XV. International Conference on the Use of Computers in Radiation Therapy – 3rd place 200 CAD (2007, Toronto, Canada).

## GRANT FUNDING

- NSERC Tier 2 Canada Research Chair in Medical Physics 500,000 CAD (2020-2025).
- NSERC Alliance "Improved material differentiation with spectral cadmium zinc telluride (CZT) detectors" 225,000 CAD (2020-2021)
- SSHRC New Frontiers in Research Fund "Towards radiotherapy of cancer with no side effects" 240,000 CAD (2019-2020).
- NSERC Engage Plus "Improved material differentiation with spectral cadmium zinc telluride (CZT) detectors" 25,000 CAD (2019).
- NSERC Engage "Image reconstruction techniques in photon counting systems utilizing Cadmium Zinc Telluride (CZT) radiation sensors" 25,000 CAD (2018).
- NSERC CREATE Grant "Polymer Nanoparticles for Drug Delivery" (Co-investigator) 3,000,000 CAD split among 8 Co-Investigators (2017-2022).
- NSERC Discovery Grant "Tackling physics challenges of small animal radiotherapy" 160,000 CAD (2016-2021).
- Varian Research grant "Exploration of clinical applications of high DQE MV imaging" 88,000 CAD split between 2 Co-Investigators (2016-2017).
- NSERC Tier 2 Canada Research Chair in Medical Physics 500,000 CAD (2015-2020).
- Canada Foundation for Innovation "Novel applications of kilovoltage x-ray beams" 204,000 CAD (2015-2020).
- British Columbia Knowledge Development Fund "Novel applications of kilovoltage x-ray beams" 204,000 CAD (2015-2020).
- NIH/NIBIB K99/R00 Pathway to Independence "Making x-ray computed tomography a molecular imaging modality" 948,000 USD (2013-2018).
- AAPM Research Seed Funding Grant "Towards radiotherapy with very-high energy electron beams" 25,000 USD (2012-2013, also mentioned in the Awards section).

## COMMITTEE MEMBERSHIPS

- Co-Chair of the AAPM Task Group 319 on the Guidelines for accurate dosimetry in radiation biology experiments
- Chair of the AAPM Working Group on Conformal Small Animal Irradiator Devices
- Chair of Medical Physics Review Articles Subcommittee
- Member of the AAPM Imaging Physics Committee
- Member of the COMP Science Committee
- Member of the AAPM Ad Hoc Committee to Establish an International Council
- Member of the Board of Editors for Medical Physics
- Member of the AAPM Biological Effects Subcommittee
- Member of the AAPM Working Group 2 Improving the reader experience by enhancing accessibility and readability, and marketing impact of Journal
- Member of AAPM Medical Physics Marketing Coordination Subcommittee
- Member of AAPM Unit No. 47 - AAPM Journals App and Medical Physics and JACMP Websites
- Member of the AAPM Task Group 269 on Guidelines for Publication of Monte Carlo Studies, American Association of Physicists in Medicine (09/2014/08/2018)
- Member of the COMP Awards Committee (10/2016-12/2019)
- Chair of COMP Sylvia Fedoruk Prize (10/2016-12/2019)

## TECHNICAL SKILLS

- Programming languages: FORTRAN, C++, Real Basic, Pascal, MATLAB
- Routine use UNIX-like operating systems (HP-UX, Solaris) and Microsoft Windows
- Monte Carlo codes (EGSnrc/BEAMnrc and DOSXYZnrc, MCNPX, Geant4 through TOPAS)
- Dosimetry with ionization chambers. TLDs and Gafchromic films, radiotherapy treatment planning
- Biology: *in vivo* and *in vitro* experiments, clonogenic survival assays, immunohistochemistry

## PUBLICATIONS AND PRESENTATIONS (TRAINEES HIGHLIGHTED WITH AN ASTERISK)

PEER-REVIEWED JOURNALS

1. **Robinson S***, **Esplen N***, Wells D, **Bazalova-Carter M**, Monte Carlo simulations of EBT3 film dose deposition for percentage depth dose (PDD) curve evaluation, *JACMP* 2020 (in print).
2. **Richtsmeier D***, **Dunning CAS***, Iniewski K, **Bazalova-Carter M**, Multi-contrast K-edge imaging on a bench-top photon-counting CT system: Acquisition parameter study, *JINST* 2020 (P10029).
3. Curry CB, **Dunning CAS***, Gauthier M, Chou HGJ, Fiuza F, Glenn GD, Tsui Y, **Bazalova-Carter M**, Glenzer S, Optimization of radiochromic film stacks to diagnose high-flux laser-accelerated proton beams, *Rev Sci Instr* 2020 (093303).
4. **O'Briain T***, Yi KM and **Bazalova-Carter M**, Technical Note: Synthesizing of Lung Tumors in Computed Tomography Images, *Med Phys* 2020 (accepted).
5. **Esplen N***, Mendonca M, and **Bazalova-Carter M**, The physics and biology of ultrahigh dose-rate (FLASH) irradiations: a topical review, *Phys Med Biol* 2020 (**invited**, in print).
6. **Dunning C*** and **Bazalova-Carter M**, Design of a Combined X-ray Fluorescence Computed Tomography (CT) and Photon-Counting CT Table-top Imaging System, *JINST* 2020 (P06031).
7. **Dunning C***, **O'Connell J***, **Robinson S***, **Murphy K***, Frencken A, Van Veggel F, Iniewski K, and **Bazalova-Carter M** 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).
8. Poirier Y, Anvari A, Johnstone CD, Brodin NP, Dos Santos M, **Bazalova-Carter M**, Sawant A, A Failure Modes and Effects Analysis Quality Management Framework for Image-Guided Small Animal Irradiators: A Change in Paradigm for Radiation Biology, *Med Phys* 2020 (2013-2022).
9. Byrne K, Alharbi M, **Esplen N***, Woulfe P, O'Keeffe S, **Bazalova-Carter M**, Foley M, Initial evaluation of the performance of novel inorganic scintillating detectors for small animal irradiation dosimetry, *IEEE Sensors* 2020 (4704-4712).
10. **Breitkreutz DY***, Renaud MA, Weil MD, Zavgordni S, Han E, Baxter H*, Seuntjens J, Song S, Boyd D and **Bazalova-Carter M**, Monte Carlo calculated kilovoltage x-ray arc therapy plans for three lung cancer patients, *BPEX* 2019 (065022).
11. **Bazalova-Carter M** and **Esplen N***, On the capabilities of conventional x-ray tubes to deliver ultra-high (FLASH) dose rates, *Med Phys* 2019 (5690-5695) (**Medical Physics Letter**, **Highlighted on physicsworld.com**).
12. **Esplen N***, Therriault-Proulx F, Beaulieu L and **Bazalova-Carter M**, Preclinical dose verification using a 3D printed mouse phantom for radiobiology experiments, *Med Phys* 2019 (5294-5303).
13. **O'Connell J***, **Kevin Murphy***, **Spencer Robinson***, Iniewski K, and **Bazalova-Carter M**, Unsupervised Learning Methods in X-ray Spectral Imaging Material Segmentation, *JINST* 2019 (P06022)
14. **Dunning C*** and **Bazalova-Carter M**, X-ray Fluorescence Computed Tomography Induced by Photon, Electron, and Proton Beams, *IEEE Trans Med Im* 2019 (2735-2743).
15. **Breitkreutz DY***, **Bialek S***, Vojnovic B, Kavanagh A, **Johnstone CD**, Rovner Z, Tsouchlos P, Kanesalingam T, **Bazalova-Carter M**, A 3D-printed modular phantom for quality assurance of image-guided small animal irradiators: design, imaging experiments and Monte Carlo simulations, *Med Phys* 2019 (2015-2024).
16. **O'Connell J***, Iniewski K, and **Bazalova-Carter M**, Optimal Planar X-ray Imaging Soft Tissue Segmentation Using a Photon Counting Detector, *JINST* 2019 (P01020).
17. Shuhendler A, Cui L, Chen Z, Shen B, James ML, Witney T, Gambhir SS, Chin FT, **Bazalova-Carter M**, Graves E, Rao J, Chen M, [18F]-SuPAR: A radiofluorinated probe for non-invasive imaging of DNA damage-dependent Poly (ADP-ribose) Polymerase Activity, *Bioconjug Chem*, 2019 (accepted).
18. **Esplen N***, **Alyaqoub E*** and **Bazalova-Carter M**, Technical Note: Manufacturing of a realistic mouse phantom for dosimetry of radiobiology experiments, *Med Phys* 2019 (1030-1036).
19. **Lindsay C***, **Bazalova-Carter M**, Wang AS, Shedlock D, Wu M, **Newson M***, Xing L, Ansbacher W, Fahrig R, and Star-Lack J, Investigation of combined kV/MV CBCT imaging with a high-DQE MV detector, *Med Phys* 2019 (563-575).
20. **Johnstone C***, Therriault-Proulx F, Beaulieu L, and **Bazalova-Carter M**, Characterization of a Plastic Scintillating Detector for the Small Animal Radiation Research Platform (SARRP), *Med Phys* 2019 (394-404).
21. **Dunning C*** and **Bazalova-Carter M**, Optimization of a table-top x-ray fluorescence computed tomography (XFCT) system, *Phys Med Biol* 2018 (235013).
22. **Breitkreutz DY***, Renaud M-A, Seuntjens JP, Weil MD, Zavgorodni SF, **Bazalova-Carter M**, Inverse optimization of low-cost kilovoltage x-ray arc therapy plans, *Med Phys* 2018 (5161-5171).
23. **Esplen N***, **Chergui L***, **Johnstone C***, and **Bazalova-Carter M**, Monte Carlo Optimization of a Microbeam Collimator Design for use on the Small Animal Radiation Research Platform (SARRP), *Phys Med Biol* 2018 (175004).
24. **Johnstone C*** and **Bazalova-Carter M**, MicroCT Imaging Dose to Mouse Organs using a Validated Monte Carlo Model of the Small Animal Radiation Research Platform (SARRP), *Phys Med Biol* 2018 (115012).

25. Sechopoulos I, Rogers DWO, **Bazalova-Carter M**, Bolch WE, Heath E, McNitt-Gray MF, Sempau J, and Williamson JF, RECORDS: improved Reporting of montE CarlO RaDiation transport Studies, *Int J Rad Onc Biol Phys* 2018 **Brief opinion**.
26. **Dunning C*** and **Bazalova-Carter M**, Sheet beam x-ray fluorescence computed tomography (XFCT) imaging of gold nanoparticles, *Med Phys* 2018 (2572-2582).
27. Sechopoulos I, Rogers DWO, **Bazalova-Carter M**, Bolch WE, Heath E, McNitt-Gray MF, Sempau J, and Williamson JF, RECORDS: improved Reporting of montE CarlO RaDiation transport Studies - Report of the AAPM Research Committee Task Group 268, *Med Phys*, 2018 (e1-e5).
28. **Breitkreutz D***, Weil MD, Zavgorodni S, **Bazalova-Carter M**, Monte Carlo simulations of a kilovoltage external beam radiotherapy system on phantoms and breast patients. *Med Phys* 2017: 6548-6559.
29. 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, External Beam Radiation Therapy for the Treatment of Human Pluripotent Stem Cell-Derived Teratomas, *Stem Cells* 2017: 1994-2000.
30. **Johnstone C***, Lindsay P, Graves EE, Wong E, Perez J, Poirier Y, Ben-Bouchta Y, Kanesalingam T, Chen H, Rubinstein A, Sheng K, **Bazalova-Carter M**, Multi-Institutional MicroCT Image Comparison of Image-Guided Small Animal Irradiators, *Phys Med Biol* 2017: 5760-5776.
31. Schueler E, Eriksson K, Hynning E, Hancock SL, Hiniker SM, **Bazalova-Carter M**, Wong TY, Le Q-T, Loo, Jr. BW, Maxim PG Very high-energy electron (VHEE) beams in radiation therapy; Treatment plan comparison between VHEE, VMAT, and PPBS, *Med Phys* 2017: 2544-2555.
32. Giacometti V, Guatellia S, **Bazalova-Carter M**, Rosenfeld AB, and Schulte RW, Development of a high resolution voxelised head phantom for medical physics applications, *Physica Medica* 2017; 33: 182-188.
33. **Bazalova-Carter M**, Weil MD, Breitkreutz D, Wilfley BP, and Graves E, Feasibility of external beam radiation therapy to deep-seated targets with kilovoltage x-rays, *Med Phys* 2017; 45: 597-607.
34. Lloyd S, Gagne I, **Bazalova-Carter M**, Zavgorodni S, Measured and Monte Carlo simulated electron backscatter to the monitor chamber for the Varian TrueBeam Linac, Phys Med Biol 2016: 8779-8793.
35. Whelan BM, Constantin DE, Holloway L, Oborn BM, **Bazalova-Carter M**, Fahrig R, and Keall PJ, Performance of a clinical gridded electron gun in magnetic fields: Implications for MRI-Linac therapy, *Med Phys* 2016; 43: 5903-5914.
36. Hadamitzky C, Zaitseva T, **Bazalova-Carter M**, Paukshto M, Hou L, Strassberg Z, Ferguson J, Matsuura Y, Dash R, Yang PC, Kretchetov S, Vogt P, Rockson S, Cooke JP, Huang N, Aligned nanofibrillar collagen scaffolds - Guiding lymphangiogenesis for treatment of acquired lymphedema, *Biomaterials* 2016: 259-267.
37. Palma B, **Bazalova-Carter M**, Qu B, Hardemark B, Hynning E, Jensen C, Maxim PG, and Loo BW, Assessment of the quality of very high-energy electron radiotherapy planning, *Radiother Oncol* 2016; 119: 154-158.
38. Chen S, Gauthier M, **Bazalova-Carter M**, Glenzer SH, Riquier R, Revet G, Antici P, Morabito A, Propp A, Starodubtsev M, Fuchs J, Absolute dosimetric characterization of GAFCHROMIC EBT3 and HDv2 films using commercial flat-bed scanners and evaluation of the scanner response function variability, *Rev Sci Instr* 2016; 87: 073301.
39. Lloyd S, Gagne I, **Bazalova-Carter M**, Zavgorodni S, Validation of Varian TrueBeam electron phase-spaces for Monte Carlo simulation of MLC-shaped fields, *Med Phys* 2016; 43: 2894-2903.
40. **Bazalova-Carter M***, Ahmad M*, Xing L, and Fahrig R, Experimental validation of L-shell x-ray fluorescence CT imaging: a phantom study, *IEEE JMI* 2015; 2: 043501.
41. **Bazalova-Carter M**, Schlosser J, Chen J, and Hristov D, Monte Carlo modeling of ultrasound probes for radiotherapy, *Med Phys* 2015; 42: 5745-5756.
42. **Bazalova-Carter M**, The potential of L-shell x-ray fluorescence CT for molecular imaging, *Br J Radiol* 2015; 88: 20140308 (**invited commentary**).
43. Shuhendler A, Ye D, Brewer K, **Bazalova-Carter M**, Lee KH, Kempen P, Wittrup K, Graves E, Rutt B, and Rao J, Molecular Magnetic Resonance Imaging of Tumor Response to Therapy, *Sci Rep* 2015; 5.
44. **Bazalova-Carter M**, Qu B, Palma B, Hardemark B, Hynning E, Jensen C, Maxim PG, and Loo BW, Treatment planning for radiotherapy with very high-energy electron beams and comparison of VHEE and VMAT plans, *Med Phys* 2015; 42: 2615-2625.
45. **Bazalova-Carter M**, Liu, M, Palma, B, Dunning, M, McCormick, D, Hemsing, E, Nelson, J, Jobe, K., Colby, E, Koong, A, Tantawi, S, Dolgashev, V, Maxim, P, and Loo, BW, Comparison of film measurements and Monte Carlo simulations of dose delivered with very high-energy electron beams in a polystyrene phantom, *Med Phys* 2015; 42: 1606-1613.
46. **Bazalova-Carter M**, Ahmad M, Fahrig R, and Xing L, Proton-induced x-ray fluorescence CT imaging, *Med Phys*, 2015; 42: 900-907 (**Medical Physics Letter**).
47. Ahmad M*, **Bazalova-Carter M***, Fahrig R, and Xing L, Optimized detector angular configuration increases the sensitivity of x-ray fluorescence computed tomography (XFCT), *IEEE Trans Med Im* 2015; 34: 1140-1147.
48. Ahmad, Pratx G, **Bazalova M**, and Xing L, X-ray luminescence and x-ray fluorescence computed tomography: new molecular imaging modalities, *Access IEEE*, 2014; 2: 1051-1061.

49. Ahmad M, **Bazalova M**, Xiang L, and Xing L, Order of magnitude sensitivity increase in x-ray fluorescence computer tomography (XFCT) imaging with an optimized spectro-spatial detector configuration: theory and simulation, *IEEE Trans Med Im* 2014; 33: 1119-1128.
50. **Bazalova M**, Nelson G, Noll, and Graves E, Modality comparison for small animal radiotherapy: a simulation study, *Med Phys* 2014, 41: 11710-1-10 (**highlighted on medicalphysicsweb.org**).
51. **Bazalova M**, Ahmad M, Pratx G, and Xing L, L-shell x-ray fluorescence computed tomography (XFCT) imaging of cisplatin, *Phys Med Biol* 2014; 59: 219-232.
52. Kuang Y, Pratx G, **Bazalova M**, Meng B, Qian J, and Xing L, Development of XFCT Imaging Strategy for Monitoring the Spatial Distribution of Platinum-based Chemodrugs: Instrumentation and Phantom Validation, *Med Phys* 2013, 030701 (**Editor's pick**).
53. Kuang Y, Pratx G, **Bazalova M**, Meng B, Qian J, and Xing L, First demonstration of multiplexed xray fluorescence CT (XFCT) imaging, *IEEE Trans Med Im* 2012, 31: 262-267.
54. **Bazalova M**, Weil MD, Wilfley B, and Graves E, Monte Carlo model of the scanning beam digital xray (SBDX) source, *Phys Med Biol* 2012, 57: 7381-7394.
55. **Bazalova M**, Kuang Y, Pratx G, and Xing L, Investigation of x-ray fluorescence tomography and K-edge imaging, *IEEE Trans Med Im* 2012; 99: 1620-1627.
56. **Bazalova M** and Graves E, The importance of tissue segmentation for dose calculations for kilovoltage radiation therapy, *Med Phys* 2011; 38:3039-3049.
57. Motomura A, **Bazalova M**, Zhou H, Keall P and Graves E, Effect of beam variables on Monte Carlo treatment planning for small animal radiotherapy, *Med Phys* 2010; 37:590-600.
58. **Bazalova M**, Zhou H, Keall P and Graves E, Kilovoltage beam Monte Carlo dose calculations in sub-millimeter voxels for small animal radiotherapy, *Med Phys* 2009; 36: 4991-4999.
59. **Bazalova M**, Carrier JF, Beaulieu L and Verhaegen F, Dual-energy CT-based material extraction for tissue segmentation in Monte Carlo dose calculations, *Phys Med Biol* 2008; 53:2439-56.
60. **Bazalova M**, Coolens C, Cury F, Childs P, Beaulieu L and Verhaegen F, Monte Carlo dose calculations for phantoms with hip prostheses, *Journal of Physics: Conference Series* 2008; 102.
61. **Bazalova M**, Carrier JF, Beaulieu L, Verhaegen F. Tissue segmentation in Monte Carlo treatment planning: a simulation study using dual-energy CT images, *Radiother Oncol* 2008; 86:93-8.
62. Liu D, Poon E, **Bazalova M**, Reniers B, Evans M, Rusch T and Verhaegen, Spectroscopic characterization of a novel electronic brachytherapy system, *Phys Med Biol* 2008; 53: 61-75
63. **Bazalova M**, Verhaegen F, Monte Carlo simulation of a computed tomography x-ray tube, *Phys Med Biol* 2007; 52:5945-55.
64. **Bazalova M**, Beaulieu L, Palefsky S and Verhaegen F, Correction of CT artifacts and its influence on Monte Carlo dose calculations, *Med Phys 2007*; 34:2119-32 (**best Canadian medical physics paper in 2007**).
65. **Bazalova M**, ATLAS Pixel Detector: Analysis of test beam data, *Czechoslovak Journal of Physics*, 2005.

## BOOK CHAPTERS

1. **Bazalova-Carter M**, Murrell DH, Parkings KM, Ronald J, Foster PJ, Graves E, Granton P, and Wong E 2016. Small Animal Radiotherapy and Imaging. In: Godfrey DJ, Van Dyk J, Das SK, Curran BH, and Wolbarst AB, ed. *Advances in Medical Physics*.
2. **Bazalova M**, Graves EE 2014. Engineering of Small Animal Conformal Radiotherapy Systems. In: Cai W, ed. *Engineering in Translational Medicine*.
3. Graves EE, **Bazalova M** 2010. X-ray Computed Tomography Principles and Contrast Agents. In: Chen X, ed. *Molecular Imaging Probes for Cancer Research*.

## SELECTED INVITED TALKS (>25)

1. **Bazalova-Carter M**, FLASH irradiations at TRIUMF, TRIUMF Science Week, 2020.
2. **Bazalova-Carter M**, The mystery of ultrahigh dose-rate (FLASH) irradiations, National University of Ireland, Galway, Ireland, 2020.
3. **Bazalova-Carter M**, Despite popular belief, kilovoltage x-rays can go a long way, AAPM Annual Meeting (virtual), 2020.
4. **Bazalova-Carter M**, From timid Eastern European student to Canada Research Chair, 40th anniversary of McGill Medical Physics Unit, Montreal, QC, November 2019.
5. **Bazalova-Carter M**, FLASH radiotherapy: We need your help. Fall Northwestern AAPM Chapter meeting, Seattle, WA, September 2019.
6. **Bazalova-Carter M**, Kilovoltage x-ray beam arc therapy, AAPM Annual meeting, San Antonio, TX, July 2019.
7. **Bazalova-Carter M**, The art of reviewing papers, AAPM Annual meeting, San Antonio, TX, July 2019.
8. **Bazalova-Carer M,** FLASH and spatially-fractionated radiotherapy at TRIUMF, TRIUMF seminar, Vancouver, BC, July 2019.

9. **Bazalova-Carter M**, Monte Carlo methods in radiotherapy innovations, The International Conference on the Use of Computer in Radiotherapy, Montreal, QC, June 2019 (**keynote**).
10. **Bazalova-Carter M**, FLASH Radiotherapy: The Physics, 41st Winter Institute of Medical Physics, Breckenridge, CO, February 2019 (**keynote**).
11. **Bazalova-Carter M**, Radiation therapy: slow or fast?, Simon Fraser University, Vancouver, BC, Canada, October 2018.
12. **Bazalova-Carter M**, Cost-effective radiotherapy with kilovoltage x-ray beams, Precision RT, Menlo Park, CA, September 2016.
13. **Bazalova-Carter M**, From x-ray fluorescence CT to dose-enhanced radiotherapy, McGill University, Montreal, QC, Canada, December 2015.
14. **Bazalova-Carter M**, Challenges of very high-energy electron therapy of cancer, TRIUMF, Vancouver, BC, Canada, October 2015.
15. **Bazalova-Carter M,** Radiotherapy with very high-energy electrons, Varian, Palo Alto, CA, October 2014.
16. **Bazalova-Carter M,** Monte Carlo dose calculations, Hokkaido University Summer School, Sapporo, Japan, August 2014.
17. **Bazalova M,** The importance of tissue segmentation for kilovoltage beam dose calculations, 2011, CART seminar, San Diego, CA, March 2011.
18. **Bazalova M,** Dose measurements for microCT imaging, Caliper Life Sciences User Meeting: San Francisco, CA, San Diego, CA, Boston, MA, May 2010.
19. **Bazalova M,** Computed tomography, Prague Winter School for Medical Physics, Prague, Czech Republic, January 2010.
20. **Bazalova M,** Small animal radiotherapy at Stanford University, Maastro Clinic Seminar, Maastricht, The Netherlands, September 2009.

## SELECTED CONFERENCE PRESENTATIONS (OUT OF >150)

1. **Esplen N***, Egoriti L, Gottberg A, **Bazalova-Carter M**, Strategies for the delivery of spatially fractionated radiotherapy using conventional and FLASH-capable sources**, COMP Annual Scientific Meeting, Kelowna, BC, 2019 (Young Investigator Symposium – 2nd place).**
2. **Dunning C***, **Richtsmeier D***, **Bazalova-Carter M**, Combined x-ray fluorescence and spectral computed tomography of multiple contrast agents, COMP Annual Scientific Meeting, Kelowna, BC, 2019 **(Young Investigator Symposium ).**
3. **Dunning C*** and **Bazalova-Carter M**, Optimization of a Table-Top X-Ray Fluorescence Computed Tomography (XFCT) System, AAPM Annual Meeting, Nashville, TN, 2018 (**Best In Physics – Imaging**).
4. **Johnstone C***, Beaulieu L, Therriault-Proulx F, and **Bazalova-Carter M**, Development and characterization of a plastic stintillating detector for small animal radiotherapy, COMP Annual Scientific Meeting, Ottawa, ON, 2017 (**Young Investigator Symposium – 3rd place**).
5. **Dunning C*** and **Bazalova-Carter M**, Alternative geometries for x-ray fluorescence CT (XFCT) imaging of gold nanoparticles, COMP Annual Scientific Meeting, Ottawa, ON, 2017 (**Young Investigator Symposium**).
6. **Johnstone C*** and **Bazalova-Carter M**, Automated Imaging Quality Assurance for Image-Guided Small Animal Irradiators, COMP Annual Scientific Meeting, Saint John, NL, Canada, 2016 (**Young Investigator Symposium**).
7. **Bazalova M**, Ahmad M, Fahrig R, and Xing L, X-Ray Fluorescence Computed Tomography Induced By Photon, Electron, And Proton Beams**,** 100th RSNA Annual Meeting, Chicago, IL, 2014 (**highlighted on medicalphysicsweb.org**).
8. **Bazalova M**, Qu B, Palma B, Hardemark B, Hynning E, Maxim P, and Loo B, Treatment-Planning Study For Very High-Energy Electron Beam Radiotherapy: Integral Dose Reduction For Pediatric Patients, ASTRO Annual Meeting, San Francisco, CA, 2014 (poster presentation, **selected for Walk with the Professor**).
9. **Bazalova M**, Qu B, Palma B, Hardemark B, Hynning E, Maxim P, and Loo B, **Featured Presentation**: Treatment planning tool for radiotherapy with very-high energy electron beams, AAPM Annual meeting, Austin, TX, 2014.
10. **Bazalova M**, Hardemark B, Hynning E, Dunning M, McCormick D, Liu M, Tantawi S, Dolgashev V, Koong A, Maxim P, and Loo B, Junior Investigator Winner: Towards radiotherapy with very-high energy electron beams, AAPM Annual meeting, Indianapolis, IN, 2013.
11. Kuang Y, Pratx G, Qiuan J, Meng B, **Bazalova M**, and Xing, L, Basic Science Abstract Award Development of XFCT Imaging Strategy for Monitoring the Spatial Distribution of Platinum Drugs: Instrumentation and Phantom Validation, ASTRO Annual Meeting, Boston, MA, 2012.
12. Kuang Y, Pratx G, Qiuan J, Meng B, **Bazalova M**, and Xing, L, Best in Physics (Joint Imaging- Therapy) - Direct Imaging of the Uptake of Platinum Anticancer Agents Using X-Ray Stimulated Fluorescence: A Proof-Of-Concept Study, AAPM Annual Meeting, Charlotte, NC, 2012.

PUBLIC TALKS

1. **Bazalova-Carter M**, Radiation Therapy of Cancer in a Flash: The Way Forward, Café Scientifique, Victoria, BC, October 2019.
2. **Bazalova-Carter M**, More with less: How low-energy 3-D radiation therapy is transforming global access; Changemakers: Bright minds and big ideas at Ideafest, Victoria, BC, 2019.

**GRADUATES**

1. Chelsea Dunning, PhD: "Contrast Agent Imaging Using An Optimized Table-top X-ray Fluorescence and Photon-Counting Computed Tomography Imaging System", October 2020, starting postdoctoral fellowship at Mayo Clinic, Rochester, MN in January 2021.
2. Dylan Breitkreutz, PhD: "Design and evaluation of a Monte Carlo model of a low-cost kilovoltage x-ray arc therapy system", June 2019, currently a medical physics resident at Stanford University, Palo Alto, CA.
3. Christopher Johnstone, PhD: "Microcomputed Tomography Dosimetry and Image Quality in Preclinical Image-Guided Radiation Therapy", April 2019, currently a medical physics resident at Princess Margaret Cancer Centre, Toronto, ON.

**INTERVIEWS**

- "Affordable medical physics technologies tackle global health disparities", Physics World, August 2020.
- "Transitions into medical physics", *Symmetry Magazine*, November 2019.
- "Can conventional x-ray tubes deliver FLASH dose rates?", *Physics World*, November 2018.
- "Turn down the dose", *UVic News*, October 2018.
- "Interviews", *UVic Women in Science*, September 2017.
- "RSNA: investigating X-ray fluorescence CT", *Medical Physics Web*, December 2014.
- "Small-animal irradiation: dose comparisons", *Medical Physics Web*, February 2014.

**INTERESTS**

- Hiking, backpacking, mountaineering, rock climbing, ice climbing, swimming, cycling, running, volleyball, basketball, Frisbee, parenting.

**REFERENCES**

- Jan Seuntjens (McGill University)
- Paul Keall (University of Sydney)
- Edward Graves (Stanford University)
- Luc Beaulieu (Université Laval)
- Lei Xing (Stanford University)
- Frank Verhaegen (University of Maastricht)