

Matthieu Lafreniere, PhD



Educational Background

Medical Physics Residency, University of California, San Francisco, Department of Radiation Oncology (2019-2021)

CAMPEP-Accredited Certificate Program in Medical Physics, Harvard Medical School (2017-2019)

Postdoctoral Research Fellowship, Department of Radiation Oncology, Brigham and Women's Hospital, Dana-Farber Cancer Institute, Harvard Medical School (2017-2019)

Lecturer, Special Relativity, University of Montreal (2016)

Ph.D., Astroparticle Physics, University of Montreal (2010-2017)

M.Sc., Astroparticle Physics, University of Montreal (accelerated transition to Ph.D.) (2009)

B.Sc., Physics, University of Montreal (2006-2008)

Awards and Honors

Excellence Scholarship (Ph.D.), Fonds de recherche du Québec - Nature et technologies (FRQNT) (2011-2012)

Accelerated Transition from M.Sc. to Ph.D. Scholarship, University of Montreal, Physics Department (2010-2011)

Travel Award, Canadian Association of Physicists (CAP) (2009)

Excellence Scholarship (M.Sc.), University of Montreal, Faculty of Arts and Sciences (2009)

Selected Publications and Presentations

M. Lafrenière, N. Mahadeo, J. Lewis, J. Rottmann, C.L. Williams. **Continuous generation of volumetric images during stereotactic body radiation therapy using periodic kV imaging and an external respiratory surrogate.** Physica Medica. 2019 Jul; 63:25-34.

PICASSO Collaboration. **Final results of the PICASSO dark matter search experiment.** Astropart. Phys. 2017 Feb;90(Supp.C):85-92.

PICO Collaboration. **Improved dark matter search results from PICO-2L Run 2.** Phys. Rev. D. 2016 Mar;93(06):061101.

PICO Collaboration. **Dark matter search results from the PICO-60 CF3I bubble chamber.** Phys. Rev. D. 2016 Mar;93(05):052014.

PICO Collaboration. **Dark Matter Search Results from the PICO-2L C3F8 Bubble Chamber .** Phys. Rev. Lett. 2015 Jun;114(23):231302.

PICASSO Collaboration. **Constraints on low-mass WIMP interactions on 19F from PICASSO.** Phys. Lett. B. 2012 May;711(02):153-61.

PICASSO Collaboration. **New insights into particle detection with superheated liquids.** New J. Phys. 2011 Apr;13(04):3006.

Proceedings of meetings PICO Collaboration. **PICASSO, COUPP and PICO - search for dark matter with bubble chambers.** Paper presented at: 3rd International Conference on New Frontiers in Physics (ICNFP 2014). Crete, Greece. EPJ Web of Conferences. 2015 May;95:04020.

PICASSO Collaboration. **Searching for Dark Matter with PICASSO.** Paper presented at: 13th International Conference on Topics in Astroparticle and Underground Physics (TAUP 2013). Phys. Procedia. 2015 Mar;61:107-111. ISSN 1875-3892.

PICASSO Collaboration. **Dark matter search with PICASSO.** Paper presented at: 4th International Conference Current Problems in Nuclear Physics and Atomic Energy (NPAE-2012). NPAE 2012 Proceedings. Inspire 1467313.

PICASSO Collaboration. **Dark matter search with PICASSO**. Paper presented at: 12th International Conference on Topics in Astroparticle and Underground Physics (TAUP 2011). J. Phys. Conf. Ser. 2012;375(1):012023.

Oral Presentations **Continuous Generation of Volumetric Images During SBRT Treatment Using kV Images and An External Respiratory Surrogate**, 2019 AAPM Annual Meeting, San Antonio, TX, USA (2019)

Continuous Generation of 3D Images During LINAC Based Radiation Therapy, NEAAPM Combined Winter Meeting & Peter Neurath Young Investigators Symposium, Boston Museum of Science, Boston, MA, USA (2019)

Continuous Generation of Volumetric Images During Treatment Using kV Images in Combination with an External Respiratory Surrogate, 2018 AAPM Annual Meeting, Music City Center, Nashville, TN, USA (2018)

Continuous Generation of Volumetric Patient Images During Treatment on a TrueBeam Using Triggered kV Images and an External Surrogate, NEAAPM Combined Winter Meeting & Peter Neurath Young Investigators Symposium, UMass Lowell Inn & Conference Center, Lowell, MA, USA (2018)

Dark Matter Direct Detection - Project In Canada to Search for SuperSymmetric Objects (PICASSO) and Chicagoland Observatory for Underground Particle Physics (COUPP) PICASSO-COUPP (PICO) Joint Collaboration, Seminar, Physics Department, University of Montreal, Montreal, Quebec, Canada (2017)

Test Beam Calibration with Superheated Droplets Detectors, PICASSO-COUPP (PICO) Collaboration Meeting, Northwestern University, Chicago, USA (2013) Search for Dark Matter with Superheated Detectors: Calibration and GEANT4 Monte Carlo Simulations in PICASSO, Canadian Association of Physicists (CAP) Congress, Montreal, Quebec, Canada (2013)

Neutron Calibration for the Project In Canada to Search for SuperSymmetric Objects (PICASSO) Collaboration, Project In Canada to Search for SuperSymmetric Objects (PICASSO) Collaboration Meeting, Sudbury Neutrino Observatory Laboratory (SNOLAB), Sudbury, Ontario, Canada (2013) Neutron Test Beam Preparation and Simulation, Project In Canada to Search for SuperSymmetric Objects (PICASSO) Collaboration Meeting, Kingston, Ontario, Canada (2012)

Project In Canada to Search for SuperSymmetric Objects (PICASSO): Detector Calibration, Natural Sciences and Engineering Research Council of Canada Evaluation of PICASSO, Montreal, Quebec, Canada (2009)

Project In Canada to Search for SuperSymmetric Objects (PICASSO): Search for Dark Matter, Canadian Association of Physicists (CAP) Canada-America-Mexico (CAM) Conference (Scholarship Awarded for Selected Abstract) (2009)

Monte Carlo Simulation with GEometry ANd Tracking (GEANT4), Project In Canada to Search for SuperSymmetric Objects (PICASSO) Collaboration Meeting, Sudbury Neutrino Observatory Laboratory (SNOLAB), Sudbury, Ontario, Canada (2009)

Poster Presentations **Continuous Generation of Volumetric Images During SBRT Using Periodic kV Imaging and an External Respiratory Surrogate**,

Varian Medical Systems 2019 Research Partnership Symposium, InterContinental Chicago
Magnificent Mile, Chicago, IL, USA (2019)

**PICASSO: Search for Dark Matter. Calibration of the Superheated Droplet Detectors
and Geant4 Monte Carlo Calibration Simulations**, Canadian Association of Physicists
(CAP) Congress, Toronto, Ontario, Canada
(2010)

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