Calder D. **Sheagren**

Ph.D. Candidate - Cardiovascular Magnetic Resonance Imaging

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Education

University of Toronto *Toronto, ON, Canada*

Ph.D. in Medical Biophysics, Supervisor: Graham Wright *Sep 2020 - Present*

Project: Evaluation of Emerging Cardiac Magnetic Resonance Methods in the presence of Cardiac Implantable Electronic Devices

University of Chicago *Chicago, IL, USA*

B.S. in Mathematics with Honors, Supervisor: Erik Shirokoff *Sep 2016 - Jun 2020*

Project: Atomic Layer Deposition Titanium Nitride and Niobium Nitride for Microwave Kinetic Inductance Detectors

Publications

First-Author Publications

Calder D. Sheagren, Tianle Cao, Jaykumar H. Patel, Zihao Chen, Hsu-Lei Lee, Nan Wang, Anthony G. Christodoulou, and *Graham A. Wright*, "Motion-Compensated T_1 Mapping in Cardiovascular Magnetic Resonance Imaging: A Technical Review." Front. Cardiovasc. Med. 10:1160183. (2023) doi:10.3389/fcvm.2023.1160183

Collaborating-Author Publications

Gregor G. Taylor, Dmitry V. Morozov, Ciaran T. Lennon, Peter S. Barry, **Calder Sheagren**, and *Robert H. Hadfield* , "Infrared single-photon sensitivity in atomic layer deposited superconducting nanowires", Applied Physics Letters 118, 191106 (2021) `https://doi.org/10.1063/5.0048799`

Peer-Reviewed Conference Proceedings

First-Author Proceedings

Calder D. Sheagren, Brenden T. Kadota, Jaykumar H. Patel, Mark Chiew, and *Graham A. Wright*, "Accelerated Cardiac Parametric Mapping using Deep Learning-Refined Subspace Models". In: O. Camara et al, Statistical Atlases and Computational Models of the Heart. Regular and CMRxRecon Challenge Papers. STACOM 2023. Lecture Notes in Computer Science, vol 14507. Springer, Cham. (2024) `https://doi.org/10.1007/978-3-031-52448-6_35`

Calder Sheagren, Peter Barry, *Erik Shirokoff*, and Qing Yang Tang, "Atomic Layer Deposition Niobium Nitride Films for High-Q Resonators", Journal of Low Temperature Physics 199, 875–882 (2020). `https://doi.org/10.1007/s10909-020-02336-2`

Conference Presentations

First-Author Presentations

SyntheticLGE.jl: An Open-Source Toolbox for Retrospective T1 Fitting and Synthetic LGE Image Generation — *Singapore - 2024*

Calder Sheagren, Brandon Tran, Jaykumar Patel, Angus Lau, and *Graham Wright* — *Digital Poster*

International Society of Magnetic Resonance in Medicine Meeting

Quantifying Cardiac Function in the Presence of Implantable Cardioverter Defibrillators with Cardiovascular Magnetic Resonance Imaging: Evaluation in Healthy Volunteers — *San Diego, CA - 2023*

Calder Sheagren, Xiuling Qi, Idan Roifman, and *Graham Wright* — *Rapid Fire Pitch*

Society of Cardiovascular Magnetic Resonance Meeting

A Minimal Cardiac MRI Protocol for Catheter Ablation Planning in Patients with Cardiac Implantable Electronic Devices — *Los Angeles, CA - 2022*

Calder Sheagren, Terenz Escartin, Philippa Krahn, Judi Paulson, Melissa Larsen, Martin Janich, Idan Roifman, and *Graham Wright* — *Oral Power Pitch*

Society of Magnetic Resonance Angiography Meeting

Validation of Automated Topological LGE Thresholding for Peri-Infarct Substrate Characterization — *London, UK - 2022*

Calder Sheagren, Terenz Escartin, Philippa Krahn, Jaykumar Patel, Fumin Guo, and *Graham Wright* — *Oral Presentatation*

International Society of Magnetic Resonance in Medicine Meeting

Fully-Automated LGE Thresholding using Weighted Total Variation Denoising and Persistent Homology — *Virtual - 2022*

Calder Sheagren, Terenz Escartin, Philippa Krahn, and *Graham Wright* — *E-poster*

Society of Cardiovascular Magnetic Resonance Meeting

Open-source Tools for Topological Data Analysis — *Virtual - 2021*

Calder Sheagren and *Graham Wright* — *Lightning Talk*

CANARIE Research Software Conference

Atomic Layer Deposition Niobium Nitride Films for High-Q Resonators — *Milan, Italy - 2019*

Calder Sheagren, Alexander Anferov, Peter Barry, David Schuster, *Erik Shirokoff*, and Qing Yang Tang — *Poster*

Low Temperature Detectors Symposium

Superconducting Thin Film Atomic Layer Deposition Titanium Nitride for Microwave Resonators — *Boston, MA - 2019*

Calder Sheagren, Peter Barry, Ritoban Basu Thakur, Rong Nie, *Erik Shirokoff*, and Qing Yang Tang — *Talk*

American Physical Society March Meeting

Applications of Thin Film Atomic Layer Deposition Superconducting Titanium Nitride to Astronomical Measurements — *Chicago, IL - 2018*

Calder Sheagren, Peter Barry, Ritoban Basu Thakur, Rong Nie, *Erik Shirokoff*, and Qing Yang Tang — *Poster*

American Vacuum Society Prairie Chapter Symposium

Collaborating-Author Presentations

Fast Motion Correction of 3D Cones Imaging for Acute Radiofrequency Ablation Lesion Characterization
Quebec City, Canada 2024

Jaykumar Patel, Terenz Escartin, **Calder Sheagren**, Melissa Larsen, Jennifer Barry, Labonny Biswas, Philippa Krahn, and *Graham Wright*
Submitted

ISMRM Motion Correction Workshop

3D CT to 2D X-Ray Image Registration for Improved Visualization of Tibial Vessels in Endovascular Procedures
Barcelona, Spain 2024

Moujan Saderi, Jaykumar H. Patel, **Calder D. Sheagren**, Judit Csöre, Trisha L. Roy, and *Graham A. Wright*
Lecture Presentation

Computer Aided Radiology and Surgery Conference

Radiofrequency Ablation (RFA) Lesion Mass Identified from Native T1-weighted MRI Correlates with Average Catheter Contact Force Following Late Gadolinium Enhancement (LGE) MRI-guided Scar Homogenization In A Swine Model of Infarction
Boston, MA, USA 2024

Terenz Escartin, Maria Terricabras, Philippa Krahn, **Calder Sheagren**, Christopher Cheung, Jennifer Barry, Melissa Larsen, and *Graham Wright*
Poster

Heart Rhythm Society Meeting

Pilot Study: Lesion volume identified from native T1-weighted MRI correlates with microvascular obstruction (MVO) volume identified from late gadolinium enhancement (LGE) MRI in patients with and without ICDs after RFA Therapy
Boston, MA, USA 2024

Terenz Escartin, Maria Terricabras, **Calder Sheagren**, Graham Wright, and *Christopher Cheung*
Poster

Heart Rhythm Society Meeting

3D Whole-Heart T1-weighted Imaging in a Two-Minute Free-Breathing Scan for Radio-Frequency Ablation Lesion Assessment
Singapore - 2024

Jaykumar Patel, Philippa Krahn, Terenz Escartin, **Calder Sheagren**, Labonny Biswas, Jen Barry, Melissa Larsen, and *Graham Wright*
Oral Presentation

International Society of Magnetic Resonance in Medicine Meeting

3D High SNR Cardiac MRI via Motion-Corrected Averaging of Multi-Heartbeat Acquisitions
Singapore - 2024

Liwen Li, Jaykumar H. Patel, Xinrui Guo, **Calder D. Sheagren**, Graham A. Wright, and *Fumin Guo*
Digital Poster

International Society of Magnetic Resonance in Medicine Meeting

Accelerated Reconstruction of Highly Undersampled Cardiac MR Image Navigators
San Diego, CA - 2024

Xinrui Guo, **Calder D. Sheagren**, Jaykumar H. Patel, Liwen Li, Graham A. Wright, and *Fumin Guo*
Oral Presentation

SPIE Medical Imaging Conference

Wideband Motion-Corrected T1 Mapping at 3 Tesla: Evaluation in Healthy Volunteers
London, UK - 2024

Graham Wright, Rachel Ospalak, **Calder Sheagren**, Jason Rock, Marcus Couch, Kelvin Chow, Xiaoming Bi, Jamie Near, and Idan Roifman
Rapid Fire Pitch

Cardiovascular Magnetic Resonance Global Meeting

Native T1-weighted MRI Indicates Acute Thermal Injury Post-RF Ablation in VT Patients
Montreal, QC - 2023

Terenz Escartin, **Calder Sheagren**, Maria Terricabras, Idan Roifman, Graham Wright, and *Christopher Cheung*
Digital Poster

Canadian Cardiovascular Conference Vascular Meeting

Hierarchical Segmentation of LGE MRI
Lyon, FR - 2023

Fumin Guo, **Calder Sheagren**, Jaykumar Patel, and *Graham Wright*
MYOSAIQ Challenge Submission

Functional Imaging and Modelling of the Heart

2D/3D Image Registration for Guidance of Endovascular Interventions in Tibial Vessels
London, ON - 2023

Moujan Saderi, Jaykumar Patel, **Calder Sheagren**, Trisha Roy, and *Graham Wright*
Pitch-and-Poster

Imaging Network Ontario Symposium

3D Multiscale Weighted Total Variation Registration for MR Image-Guided Catheter Interventions
London, UK - 2022

Jaykumar Patel, **Calder Sheagren**, Saqeeb Hassan, Fatemeh Rastegar Jooybari, Christopher Macgowan, and *Graham Wright*
Digital Poster

International Society of Magnetic Resonance in Medicine Meeting

3D Motion Compensation with Cone Trajectories - in silico Validation Using the MR-XCAT Framework — *Virtual - 2022*

Jaykumar Patel, **Calder Sheagren**, Fatemeh Rastegar Jooybari, Saqeeb Hassan, Okai Addy, Christopher Macgowan, and *Graham Wright* — *E-poster*

Society of Cardiovascular Magnetic Resonance Meeting

Invited Talks

Multicontrast Cardiac MRI: Historical Perspectives and Modern Applications — *Wuhan, China - 2024*

China Academy of Sciences MRI Group

Awards

MBP Excellence Award — *2020-2024*

University of Toronto Fund — *$21k CAD total*

Mary H. Beatty Fellowship Award — *2021-2022*

University of Toronto — *$10k CAD / year*

Teaching

UToronto MBP 1201H: Introduction to Biostatistics — *Aut 2022, Aut 2023*

Teaching Assistant — *2022: 4.17/5, N=26*; *2023: 4.19/5, N=32*

UChicago MATH 131-132: Introductory Calculus — *Aut 2017, Win 2020*

Junior Tutor

UChicago MATH 195-196: Multivariable Calculus and Linear Algebra — *Spr 2018, Win 2020*

Grader

UChicago MATH 151-153: Calculus — *Win/Spr/Aut 2018, Win/Spr 2019*

Course Assistant

Outreach

ISMRM Motion Correction Workshop Organizing Committee — *Member, 2023-2024*

Society of Magnetic Resonance Angiography Early Career Committee — *Co-Chair, 2024-Present*; *Member, 2022-Present*

Medical Biophysics Graduate Student Association — *Intl. Student Rep., 2023-2024*; *Communications Rep., 2022-2023*

Naperville Central High School — *Careers in Medical Physics Talk, February 2022*

Ad-hoc Journal Reviewing

Journal of Magnetic Resonance Imaging

Quantitative Imaging in Medicine and Surgery

Magnetic Resonance Imaging

Magnetic Resonance in Medicine: Code Reviewing

Journal of Vacuum Science and Technology

Skills

Linux Computation	Python, LaTeX, vim, bash, git
Image Reconstruction	BART, PyTorch, Sigpy, Julia
Vendor Scanner Programming	GE EPIC, Siemens IDEA
Languages	English (fluent), Mandarin Chinese (conversational)