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

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*

Journal Reviewing

Magnetic Resonance Imaging — *Reviewer, 2024*

Magnetic Resonance in Medicine — *Code Reviewer, 2023-Present*

Journal of Vacuum Science and Technology — *Reviewer, 2021*

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)