

# Calder D. Sheagren

PH.D. CANDIDATE - CARDIOVASCULAR MAGNETIC RESONANCE IMAGING

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## Education

### University of Toronto

PH.D. IN MEDICAL BIOPHYSICS, SUPERVISOR: GRAHAM WRIGHT

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

Toronto, ON, Canada

Sep 2020 - Present

### University of Chicago

B.S. IN MATHEMATICS WITH HONORS, SUPERVISOR: ERIK SHIROKOFF

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

Chicago, IL, USA

Sep 2016 - Jun 2020

## 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

**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>

### 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", *CMRxRecon Challenge, Statistical Atlases and Computational Modelling of the Heart Proceedings* (2023)

## Conference Presentations

### FIRST-AUTHOR PRESENTATIONS

#### Quantifying Cardiac Function in the Presence of Implantable Cardioverter Defibrillators with Cardiovascular Magnetic Resonance Imaging: Evaluation in Healthy Volunteers

**CALDER SHEAGREN**, XIULING QI, IDAN ROIFMAN, AND *Graham Wright*

Society of Cardiovascular Magnetic Resonance Meeting

San Diego, CA - 2023

Rapid Fire Pitch

#### A Minimal Cardiac MRI Protocol for Catheter Ablation Planning in Patients with Cardiac Implantable Electronic Devices

**CALDER SHEAGREN**, TERENCE ESCARTIN, PHILIPPA KRAHN, JUDI PAULSON, MELISSA LARSEN, MARTIN JANICH, IDAN ROIFMAN,

AND *Graham Wright*

Society of Magnetic Resonance Angiography Meeting

Los Angeles, CA - 2022

Oral Power Pitch

#### Validation of Automated Topological LGE Thresholding for Peri-Infarct Substrate Characterization

**CALDER SHEAGREN**, TERENCE ESCARTIN, PHILIPPA KRAHN, JAYKUMAR PATEL, FUMIN GUO, AND *Graham Wright*

International Society of Magnetic Resonance in Medicine Meeting

London, UK - 2022

Oral Presentation

#### Fully-Automated LGE Thresholding using Weighted Total Variation Denoising and Persistent Homology

**CALDER SHEAGREN**, TERENCE ESCARTIN, PHILIPPA KRAHN, AND *Graham Wright*

Society of Cardiovascular Magnetic Resonance Meeting

Virtual - 2022

E-poster

## Open-source Tools for Topological Data Analysis

CALDER SHEAGREN AND *Graham Wright*

CANARIE Research Software Conference

Virtual - 2021

Lightning Talk

## Atomic Layer Deposition Niobium Nitride Films for High-Q Resonators

CALDER SHEAGREN, ALEXANDER ANFEROV, PETER BARRY, DAVID SCHUSTER, *Erik Shirokoff*, AND QING YANG TANG

Low Temperature Detectors Symposium

Milan, Italy - 2019

Poster

## Superconducting Thin Film Atomic Layer Deposition Titanium Nitride for Microwave Resonators

CALDER SHEAGREN, PETER BARRY, RITOBAN BASU THAKUR, RONG NIE, *Erik Shirokoff*, AND QING YANG TANG

American Physical Society March Meeting

Boston, MA - 2019

Talk

## Applications of Thin Film Atomic Layer Deposition Superconducting Titanium Nitride to Astronomical Measurements

CALDER SHEAGREN, PETER BARRY, RITOBAN BASU THAKUR, RONG NIE, *Erik Shirokoff*, AND QING YANG TANG

American Vacuum Society Prairie Chapter Symposium

Chicago, IL - 2018

Poster

## COLLABORATING-AUTHOR PRESENTATIONS

### Wideband Motion-Corrected T1 Mapping at 3 Tesla: Evaluation in Healthy Volunteers

RACHEL OSPALAK, CALDER SHEAGREN, JASON ROCK, MARCUS COUCH, KELVIN CHOW, XIAOMING BI, JAMIE NEAR, IDAN

ROIFMAN, AND *Graham Wright*

Cardiovascular Magnetic Resonance Global Meeting

London, UK - 2024

Rapid Fire Pitch

### Native T1-weighted MRI Indicates Acute Thermal Injury Post-RF Ablation in VT Patients

TERENZ ESCARTIN, CALDER SHEAGREN, MARIA TERRICABRAS, IDAN ROIFMAN, GRAHAM WRIGHT, AND *Christopher Cheung*

Canadian Cardiovascular Conference Vascular Meeting

Montreal, QC - 2023

Digital Poster

### Hierarchical Segmentation of LGE MRI

FUMIN GUO, CALDER SHEAGREN, JAYKUMAR PATEL, AND *Graham Wright*

Functional Imaging and Modelling of the Heart

Lyon, FR - 2023

MYOSAIQ Challenge Submission

### 2D/3D Image Registration for Guidance of Endovascular Interventions in Tibial Vessels

MOUJAN SADERI, JAYKUMAR PATEL, CALDER SHEAGREN, TRISHA ROY, AND *Graham Wright*

Imaging Network Ontario Symposium

London, ON - 2023

Pitch-and-Poster

### 3D Multiscale Weighted Total Variation Registration for MR Image-Guided Catheter Interventions

JAYKUMAR PATEL, CALDER SHEAGREN, SAQEEB HASSAN, FATEMEH RASTEGAR JOOYBARI, CHRISTOPHER MACGOWAN, AND

*Graham Wright*

International Society of Magnetic Resonance in Medicine Meeting

London, UK - 2022

Digital Poster

### 3D Motion Compensation with Cone Trajectories - in silico Validation Using the MR-XCAT Framework

JAYKUMAR PATEL, CALDER SHEAGREN, FATEMEH RASTEGAR JOOYBARI, SAQEEB HASSAN, OKAI ADDY, CHRISTOPHER

MACGOWAN, AND *Graham Wright*

Society of Cardiovascular Magnetic Resonance Meeting

Virtual - 2022

E-poster

## Awards

### MBP Excellence Award

UNIVERSITY OF TORONTO FUND

2020-2024

\$21k CAD total

### Mary H. Beatty Fellowship Award

UNIVERSITY OF TORONTO

2021-2022

\$10k CAD /year

## Teaching

### UToronto MBP 1201H: Introduction to Biostatistics

TEACHING ASSISTANT

Aut 2022, Aut 2023

2022: 4.17/5, N=26.

### UChicago MATH 131-132: Introductory Calculus

JUNIOR TUTOR

Aut 2017, Win 2020

### UChicago MATH 195-196: Multivariable Calculus and Linear Algebra

GRADER

Spr 2018, Win 2020

Outreach

Magnetic Resonance in Medicine	Code Reviewer, 2023-Present
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 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, Mandarin Chinese