Stanford



# Charles McGrath

Postdoctoral Scholar, Radiological Sciences Laboratory

Curriculum Vitae available Online

## Bio

### BIO

Charles McGrath is a postdoctoral scholar at the Radiological Sciences Laboratory (RSL) at Stanford University, working with Dr. Daniel Ennis on cardiovascular magnetic resonance imaging. His research focuses on flow imaging, particularly 4D flow MRI and the quantification of complex hemodynamics and on building open, reproducible simulation tools that support methods development across the cardiovascular MR community.

He earned his Dr.Sc. in Biomedical Engineering from ETH Zurich in 2024, advised by Prof. Sebastian Kozerke, with a thesis on simulation and optimal sequence design for lower-field cardiovascular MRI. During his doctoral work, he developed referenceless 4D flow MRI techniques using radial balanced SSFP at lower field strengths and contributed to widely used open-source tools for cardiovascular MR simulation (CMRsim) and sequence design (CMRseq). He is an active advocate for open science in the MR community and continues to develop and maintain these tools as part of his research practice. He previously received an M.Sc. with distinction in Biomedical Engineering (Medical Physics) jointly from ETH Zurich, and a B.A.Sc. in Engineering Physics from the University of British Columbia.

### HONORS AND AWARDS

- Best Abstract, Workshop on Advances in MR Flow (2024)
- Editor’s Pick June 2024, Magnetic Resonance in Medicine (2024)
- Cover Image June 2024, Magnetic Resonance in Medicine (2024)
- Magna Cum Laude Merit Award (Top 15%), ISMRM Annual Meeting (2023)
- Best Abstract, MRI Together (2022)

### STANFORD ADVISORS

- Daniel Ennis, Postdoctoral Faculty Sponsor

### LINKS

- Google Scholar: https://scholar.google.com/citations?user=Jgmm2q4AAAAJ&hl=en
- GitHub: https://github.com/mcgrathcm
- LinkedIn: https://www.linkedin.com/in/charles-mcgrath-463b67106/

## Publications

### PUBLICATIONS

- **MRI-Based Pressure Gradient Mapping in Patient-Specific Models of Coarctation of the Aorta.** *medRxiv : the preprint server for health sciences*

Nair, P. J., Ferrari, L., Loecher, M., McGrath, C., Castillo Passi, C. A., Marsden, A. L., Ennis, D. B.
2026

- **Referenceless 4D flow MRI using radial balanced SSFP at 0.6 T** *MAGNETIC RESONANCE IN MEDICINE*
  Mcgrath, C., Dirix, P., Vousten, V., Smink, J., Ercan, E., Boernert, P., Kozerke, S.
  2025; 94 (2): 625-639

- **CMRsim-A python package for cardiovascular MR simulations incorporating complex motion and flow.** *Magnetic resonance in medicine*
  Weine, J., McGrath, C., Dirix, P., Buoso, S., Kozerke, S.
  2024; 91 (6): 2621-2637

- **Self-gated cine phase-contrast balanced SSFP flow quantification at 0.55 T.** *Magnetic resonance in medicine*
  McGrath, C., Bieri, O., Kozerke, S., Bauman, G.
  2024; 91 (1): 174-189

- **Ramping down a clinical 3 T scanner: a journey into MRI and MRS at 0.75 T.** *Magma (New York, N.Y.)*
  Guenthner, C., Peereboom, S. M., Dillinger, H., McGrath, C., Albannay, M. M., Vishnevskiy, V., Fuetterer, M., Luechinger, R., Jenneskens, T., Sturzenegger, U., Overweg, J., Koken, P., Börnert, et al
  2023; 36 (3): 355-373

- **Fundamentals of turbulent flow spectrum imaging.** *Magnetic resonance in medicine*
  Dillinger, H., McGrath, C., Guenthner, C., Kozerke, S.
  2022; 87 (3): 1231-1249